02-9009-04-SI
REV. NO. 0

FINAL DRAFT
SITE INSPECTION REPORT
SUFFOLK AIRPORT C & D SITE
WESTHAMPTON BEACH, NEW YORK
VOLUME 1 OF 2

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-9009-04
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

JUNE 28, 1991

HALLIBURTON NUS ENVIRONMENTAL CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:

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SITE SUMMARY AND RECOMMENDATIONS

The Suffolk Airport C&D Site is located at the Suffolk County Airport in the Town of Westhampton Beach, Suffolk County, New York. The airport is the location of four areas of concern; three of which are listed in CERCLIS. Area 1 is the runway disposal dump or construction and demolition (C&D) site, CERCLIS I.D. Number NYD981186943, area 2 is the Fire Training Area (FTA), CERCLIS ID number NYD986866432, area 3 is the Air National Guard (ANG) Base, CERCLIS I.D. Number NY2572824249, and area 4 is the Canine Kennel landfill which is not listed on CERCLIS. The Suffolk County Airport is currently owned by Suffolk County and is operated by the Suffolk County Department of Public Works (SCDPW). The United States Air Force, operated the facility as the Suffolk County Air Force Base from 1943, until official closing in 1969. In 1970, the land and facilities were acquired by Suffolk County and the airfield has operated as the Suffolk County Airport (SCA) since. In 1971, the New York Air National Guard leased approximately 70 acres of the property and facilities for its present mission of aerospace rescue and recovery. This site inspection covers the investigation of the Suffolk Airport C&D site; however, target populations and distances are given for each of the identified areas of concern. Figure 1 presents a site location map showing each of the four areas of concern and Figure 2 presents a site map for the C&D Site.

The Suffolk Airport C&D site consists of an inactive 9-acre dump located in the southeast corner of the airport. The Quogue Wildlife Refuge is located approximately 1,000 feet due east of the site, and the nearest surface water body is Quantuck Creek, located approximately 2,000 feet southwest of the site. The site is bordered by an airstrip to the north, to the east and west by wooded areas, and to the south by a strip of woods and an access road. Approximately one-third of this site is covered by concrete rubble from re-construction of the airfield runways by Suffolk County Air Force Base (SCAFB). The remaining acres consist of random surface scattering of waste piles. The majority of wastes disposed of at this site were reported to be inert waste associated with construction, spent oil filters, oil and solvent cans, 55-gallon drums, and possibly buried munitions. Several drums and containers, rocket packing material, and what appeared to be the contents of a rocket were observed during a site inspection conducted by NUS Corp Region 2 FIT. The entire airport is enclosed by a fence approximately 12 feet in height. Access to the airport grounds is limited by a gate that is at times open. However, once onto the airport property, no barrier prevents entry onto the dump site.

The Canine Kennel Landfill was reportedly used by SCAFB during deactivation activities for burial of inert wastes. The site consists of a landfill, approximately 1-acre in size. The landfill is located approximately 1,200 feet northeast of the C&D site. Electrical transformers and capacitors containing PCBs were found at this site and reportedly removed in 1984. There is confirmation that PCB contamination has occurred in the near-surface soils. The source of the PCB material found at the site is unknown.

SITE SUMMARY (CONT'D)

The Fire Training Area (FTA) was used by the SCAFB, the SCA, ANG and local fire departments for fire training exercises, from approximately 1943 to 1986. The site consists of a concrete underground storage tank and a concrete fire burn area, approximately 60 square feet in size. The site is located approximately 900 feet north-northwest of the C&D Site. During earlier operations solvents, waste oils, and fuel were stored in underground tanks located outside hangers and shops throughout the base. Several times a month, these flammable liquids were collected and transported to the fire burning area for training exercises. The training procedures entailed pouring liquids onto the ground (or concrete) at the FTA and igniting them. The fire was extinguished during these fire training exercises. The quantity of liquids burned at each fire training exercise is unknown. Up until 1971, these waste solvents and oils reportedly included kerosene, mineral spirits, trichloroethylene, methyl ethyl ketone, toluene, and others. Since 1971, only JP-4 jet fuel was used during these exercises.

The Air National Guard (ANG) Base is 70 acres of property, buildings and other facilities located in the southwest portion of the airport. This property is leased from the SCA by the ANG. Hazardous waste concerns with this area are associated with past storage and disposal practices in and around several of the buildings and work facilities in this area. Both the FTA and the ANG area are currently being investigated by the U.S. Department of Defense under the Hazardous Waste Remedial Action Program (HAZ WRAP).

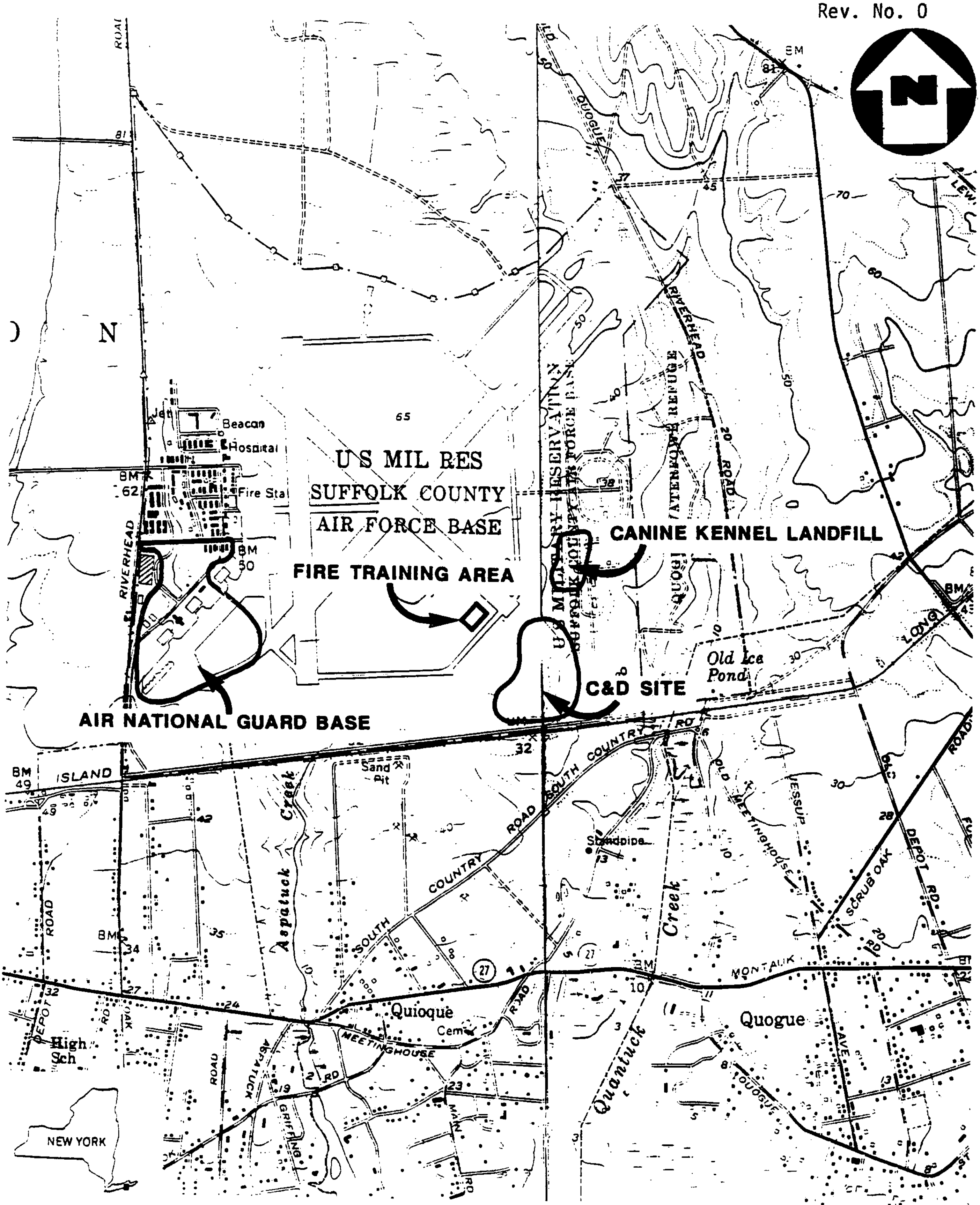
Two streams are located to the south of Suffolk Airport; Aspatuck and Quantuck Creek. Both of these creeks discharge to Quantuck Bay to the south and drain portions of Suffolk County Airport. Located east of the airport is the Quogue Wildlife Refuge ponds and streams, which drain south into Quantuck Creek. The nearest residence is located approximately 2,200 feet south of the airport on South County Road.

The Town of Westhampton Beach receives its water supply from private wells and the Suffolk County Water Authority (SCWA) well fields. There are three well fields located within the 4-mile radius of the site, the nearest of which is located approximately 2,000 feet south-southeast of the C & D site. Groundwater supplies 100 percent of all the potable water in the area, either through municipal or private wells. SCWA well fields serve approximately 50,400 people. The nearest domestic supply well is located east of the airport, approximately 3,500 feet. The entire airport facility is located within the Central Suffolk Pine Barrens, which has been designated as a Critical Environmental Area (CEA). The Pine Barrens also has been recognized as being a significant groundwater recharge area.

SITE SUMMARY (CONT'D)

On February 13, 1991, NUS Corporation Region 2 FIT personnel conducted a sampling site inspection at Suffolk Airport C&D Site, at which time 11 soil samples were collected. Samples were analyzed for Target Compound List (TCL) contaminants. Analytical results from soil samples indicate elevated levels of TCL contaminants at several sample locations. These compounds include: aluminum, barium, cadmium, chromium, copper, iron, lead, manganese, zinc, magnesium, ethylbenzene, toluene, xylenes, diethylphthalate, di-n-butylphthatlate, butylbenzylphthlate, and pesticides.

The Suffolk Airport C&D Site is recommended for an **EXPANDED SITE INSPECTION**. Based on analytical results, a release to groundwater is suspected. NUS Region 2 FIT personnel were unable to locate the groundwater monitoring wells that are reportedly at the site; therefore, no groundwater samples were collected and a release to groundwater cannot be concluded. A release of contaminants to surface waters of the Quogue Wildlife Refuge, which is located approximately 1,000 feet east of the site, may occur via groundwater discharge. Public water supply wells serving approximately 35,000 people are located within 0.5 mile of the C&D site. Approximately 500 to 600 people work at the Suffolk County Airport.



(QUAD) QUOGUE, N.Y.

SITE LOCATION MAP
FOR

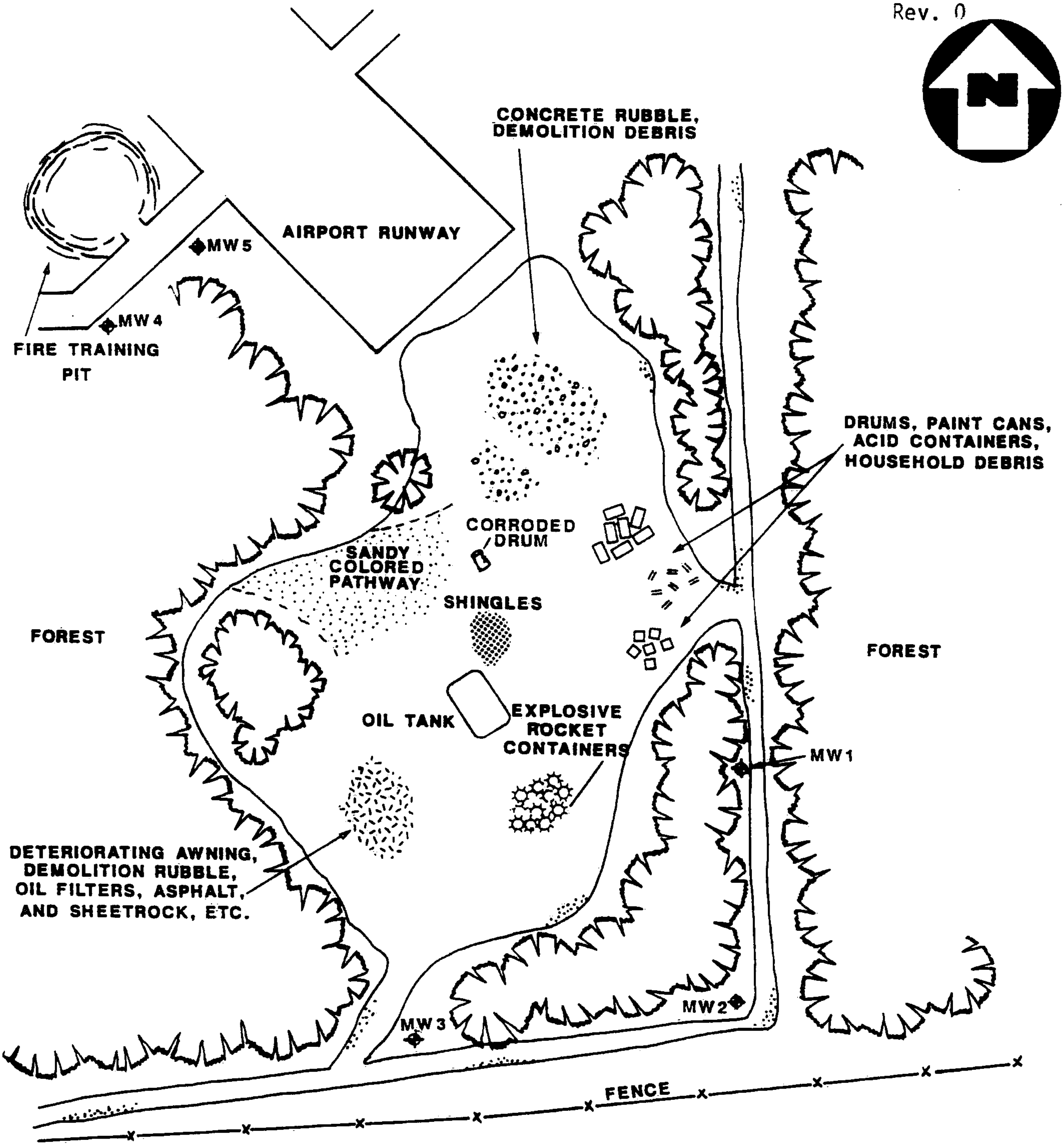
SUFFOLK AIRPORT
C&D SITE, AIR NATIONAL GUARD BASE,
FIRE TRAINING AREA, CANINE KENNEL LANDFILL

SCALE 1"=2000'

FIGURE 1

NUS CORPORATION

02-9009-04-SI
Rev. 0



SITE MAP
SUFFOLK AIRPORT C & D SITE,
WESTHAMPTON BEACH, N.Y.
NOT TO SCALE

FIGURE 2

NUS CORPORATION

SITE ASSESSMENT REPORT: SITE INSPECTION

PART I: SITE INFORMATION

1. Site Name/Alias Suffolk Airport C & D Site

   Street Old Riverhead Road

   City Westhampton Beach State New York Zip 11978

2. County Suffolk County Code 103 Cong. Dist. 1

3 EPA ID No. NYD981186943

4. Block No. 01.00 Lot No. 001.000

5. Latitude 40° 50′ 02″ N Longitude 72° 37′ 23″ W

   USGS Quad. Westhampton (T.O.S. Hampton) NY

6. Owner Suffolk County, Tel. No. (516) 282-1600

   Street Yaphank Avenue

   City Yaphank State New York Zip 11980

7a. Current Operator None

7b. Former Operator United States Air Force Tel. No. Unknown

   Street Bolling AFB

   City Washington State D.C. Zip 20013

8. Type of Ownership

   ☐ Private ☐ Federal ☐ State

   ☒ County ☐ Municipal ☐ Unknown ☐ Other ________

9. Owner/Operator Notification on File

   ☐ RCRA 3001 Date ________ ☐ CERCLA 103c Date ________

   ☐ None ☒ Unknown

10. Permit Information

Permit	Permit No.	Date Issued	Expiration Date	Comments
None				

11. Site Status

   ☐ Active ☒ Inactive ☐ Unknown

12. Years of Operation 1971 to 1982

13. Identify the types of waste sources (e.g., landfill, surface impoundment, piles, stained soil, above- or below-ground tanks or containers, land treatment, etc.) on site. Initiate as many waste unit numbers as needed to identify all waste sources on site.

(a) Waste Sources

Waste Unit No.	Waste Source Type	Facility Name for Unit
1	Open Dump	Open Dump

(b) Other Areas of Concern

Identify any miscellaneous spills, dumping, etc. on site; describe the materials and identify their locations on site.

N/A

Ref. Nos. 1, 2, 3, 4, 14, 27, 30

14. Information available from

Contact Amy Brochu Agency U.S. EPA Tel. No. (908) 906-6802

Preparer Joanne Torchia Agency NUS Corp. Region 2 FIT Date June 28, 1991

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following items.

Waste Unit 1 - Open Dump

Source Type

____	Landfill	____	Contaminated Soil
____	Surface Impoundment	____	Pile
____	Drums	____	Land Treatment
____	Tanks/Containers	X	Other

Description:

Suffolk County Airport is currently owned by Suffolk County and operated by the Suffolk County Department of Public Works. The prior owner and operator of the airport was the United States Air Force (USAF). The USAF had leased approximately 9 acres from Suffolk County for a construction and debris area (C&D Site). Although the site was used by the USAF from 1950 to 1970, the Air National Guard (ANG), Suffolk County Airport (SCA), and other leasees also used the area from 1971 to 1982. The site is an inactive dump located in the southeast corner of the airport. Approximately one-third of the site is covered by concrete rubble from re-construction of the air field runways by the USAF. Other areas of the dump reportedly consist of inert waste associated with construction, spent oil filters, oil and solvent cans, and 55-gallon drums, and possibly buried munitions. Several drums and containers, rocket packing material, and what appeared to be the contents of a rocket were observed during a site inspection conducted by NUS Corp. Region 2 FIT.

Hazardous Waste Quantity

The specific quantity of waste which was disposed of on site is unknown; however, analytical results from samples collected during the NUS Corp. Region 2 site inspection indicate the presence of hazardous substances at the site.

Hazardous Substances/Physical State

Actual wastes disposed of at the site are unknown. It is reported that waste disposed of throughout the dump include: concrete rubble, spent oil filters, oil and solvent cans, 55-gallon drums, and munitions material. Analytical results from soil samples collected during the NUS Region 2 site inspection indicate elevated levels of Target Compound List (TCL) contaminants at several sample locations. These compounds include: aluminum, barium, cadmium, chromium, copper, iron, lead, manganese, zinc, magnesium, ethylbenzene, toluene, xylenes, diethylphthalate, di-n-butylphthalate, butylbenzylphthalate and pesticides.

Ref. Nos. 4; 5; 18 pps. 24, 25; 25

PART III: SAMPLING RESULTS

EXISTING ANALYTICAL DATA

In March 1982 samples were collected at Suffolk Airport C&D Site by the Suffolk County Department of Health Services (SCDHS) during the installation of three groundwater monitoring wells. These samples were analyzed by New York Testing Laboratories, Inc. and indicate the presence of volatile organic contaminants. However, since the sampling procedures and QA/QC protocols used by SCDHS are unknown, no conclusions can be made based on these results.

Ref. No. 10

SITE INSPECTION RESULTS

NUS Corporation Region 2 FIT conducted a sampling site inspection at the Suffolk Airport C&D site on February 13, 1991. A total of 14 environmental soil samples were collected for Target Compound List (TCL) contaminants, excluding cyanide. Table 1 presents a summary of the analytical data and Figure 3 provides a Sample Location Map. All samples were analyzed under the Contract Laboratory Program (CLP). A complete presentation of the TCL analytical results can be found in Reference No. 25. Soil samples were collected to characterize waste sources on site, to assess the potential for direct contact with contaminated soil, and to determine the potential for a release of contaminants to groundwater. Three groundwater monitoring wells were reportedly installed downgradient of the site but were not located; therefore, no groundwater samples were collected. Analytical results indicate the presence of chloromethane, methylene chloride, and acetone in the rinsate samples. These contaminants were not detected in any of the environmental samples.

SITE [redacted] SUFFOLK [redacted] C&D S[redacted] [redacted]LE [redacted]
TDD: 02-9009-04
SAMPLING DATE: 2/13/91
EPA CASE NO.: 15070 LAB: CEIMIC CORP.

SITE INSPECTION ANALYTICAL RESULTS
SUFFOLK AIRPORT C&D SITE
WEST HAMPTON BEACH, NEW YORK

VOLATILES														
Sample ID No.	NYNT-S1(MS/MSD)	NYNT-S2	NYNT-S3	NYNT-S4	NYNT-S5	NYNT-S6	NYNT-S7	NYNT-S8	NYNT-S9	NYNT-S10	NYNT-S11(DUP)	NYNT-RIN1	NYNT-RIN2	NYNT-RIN3
Traffic Report No.	BFU89	BFU90	BFU91	BFU92	BFU93	BFU94	BFU95	BFU96	BFU97	BFU98	BFU99	BGC01	BGC02	BGC03
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	WATER	WATER	WATER
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/L	ug/L	ug/L
Dilution Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Percent Moisture	6	4	3	5	7	5	10	7	5	3	6	--	--	--
Chloromethane												48 E	61 E	40 E
Bromomethane														
Vinyl Chloride														
Chloroethane														
Methylene Chloride												10	13	B
Acetone												16 E	J	B
Carbon Disulfide														
1,1-Dichloroethene														
1,1-Dichloroethane														
Trans-1,2-Dichloroethene (total)														
Chloroform														
1,2-Dichloroethane														
2-Butanone	R	R	R	R	R	R	R	R	R	R	R			
1,1,1-Trichloroethane														
Carbon Tetrachloride														
Vinyl Acetate														
Bromodichloromethane														
1,2-Dichloropropane														
cis-1,3-Dichloropropene														
Trichloroethene														
Dibromochloromethane														
1,1,2-Trichloroethane														
Benzene														
trans-1,3-Dichloropropene														
Bromoform														
4-Methyl-2-Pentanone														
2-Hexanone								J						
Tetrachloroethene														
Toluene								630						
1,1,2,2-Tetrachloroethane														
Chlorobenzene														
Ethylbenzene								120						
Styrene														
Xylenes (Total)								960						

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution

[redacted]DATE: [redacted] [redacted]

EPA CASE NO.: 15870 LAB: CEIMIC CORP.

TABLE 1
SITE INSPECTION ANALYTICAL RESULTS
SUFFOLK AIRPORT C&D SITE
WEST HAMPTON BEACH, NEW YORK

SEMI-VOLATILES														
Sample ID No.	NYWT-S1(MS/MSD)	NYWT-S2	NYWT-S3	NYWT-S4	NYWT-S5	NYWT-S6	NYWT-S7	NYWT-S8	NYWT-S9	NYWT-S10	NYWT-S11(DUP)	NYWT-RIN1	NYWT-RIN2	NYWT-RIN3
Traffic Report No.	BFU89	BFU90	BFU91	BFU92	BFU93	BFU94	BFU95	BFU96	BFU97	BFU98	BFU99	BGC01	BGC02	BGC03
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	WATER	WATER	WATER
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/L	ug/L	ug/L
Dilution Factor/GPC Cleanup (Y)	1.0	1.0	1.0	1.0	1.0	1.0	8.0	10.0	10.0	1.0	1.0	1.0	1.0	1.0
Percent Moisture	8	7	5	5	7	7	10	8	15	1	6	--	--	--
Phenol								J						
bis(2-Chloroethyl)ether														
2-Chlorophenol														
1,3-Dichlorobenzene														
1,4-Dichlorobenzene	J	J	J	J	J	J				J	J			
Benzyl alcohol														
1,2-Dichlorobenzene														
2-Methylphenol														
bis(2-Chloroisopropyl)ether														
4-Methylphenol														
N-Nitroso-di-n-dipropylamine														
Hexachloroethane														
Nitrobenzene							J							
Isophorone														
2-Nitrophenol														
2,4-Dimethylphenol														J
Benzoic acid								J						
bis(2-Chloroethoxy)methane														
2,4-Dichlorophenol														
1,2,4-Trichlorobenzene														
Naphthalene								J						
4-Chloroaniline														
Hexachlorobutadiene														
4-Chloro-3-Methylphenol														
2-Methylnaphthalene														
Hexachlorocyclopentadiene														
2,4,6-Trichlorophenol														
2,4,5-Trichlorophenol														
2-Chloronaphthalene														
2-Nitroaniline							J							
Dimethylphthalate														
Acenaphthylene														
2,6-Dinitrotoluene														
3-Nitroaniline														
Acenaphthene														
2,4-Dinitrophenol														
4-Nitrophenol														
Dibenzofuran														
2,4-Dinitrotoluene														
Diethylphthalate							37000							
4-Chlorophenyl-phenyl ether														
Fluorene														
4-Nitroaniline														
4,6-Dinitro-2-methylphenol														
N-nitrosodiphenylamine														
4-Bromophenyl-phenyl ether														
Hexachlorobenzene														
Pentachlorophenol														
Phenanthrene	J													

02-9009-04-SI
Rev.0

TABLE I
SITE INSPECTION ANALYTICAL RESULTS
SUFFOLK AIRPORT C&D SITE
WEST HAMPTON BEACH, NEW YORK

SITE NAME: SUFFOLK AIRPORT C&D SITE
TDD#: 02-9009-04
SAMPLING DATE: 2/13/91
EPA CASE NO.: 15878 LAB: CEIMIC CORP.

SEMI-VOLATILES														
Sample ID No.	NYNT-S1(MS/MSD)	NYNT-S2	NYNT-S3	NYNT-S4	NYNT-S5	NYNT-S6	NYNT-S7	NYNT-S8	NYNT-S9	NYNT-S10	NYNT-S11(DUP)	NYNT-RIN1	NYNT-RIN2	NYNT-RIN3
Traffic Report No.	BFU89	BFU90	BFU91	BFU92	BFU93	BFU94	BFU95	BFU96	BFU97	BFU98	BFU99	BGC01	BGC02	BGC03
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	WATER	WATER	WATER
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/L	ug/L	ug/L
Dilution Factor/GPC Cleanup (Y)	1.0	1.0	1.0	1.0	1.0	1.0	8.0	10.0	10.0	1.0	1.0	1.0	1.0	1.0
Percent Moisture	8	7	5	5	7	7	10	8	15	8	6	--	--	--
Anthracene														
Di-n-butylphthalate								8000						
Fluoranthene	J		J	J			J				J			
Pyrene	J		J	J					J		J			
Butylbenzylphthalate						J		20000						
3,3'-Dichlorobenzidine														
Benzo(a)anthracene	J										J			
Chrysene	J			J			J				J			
bis(2-Ethylhexyl)phthalate												J		
Di-n-octylphthalate														
Benzo(b)fluoranthene	J			J							J			
Benzo(k)fluoranthene	J			J							J			
Benzo(a)pyrene	J										J			
Indeno(1,2,3-cd)pyrene	J										J			
Dibenz(a,h)anthracene														
Benzo(g,h,i)perylene	J										J			

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

02-9009-04-SI
Rev. 0

[redacted]LE[redacted]

SITE NAME: SUFFOLK AIRPORT C&D SITE
TDD#: 02-9009-04
SAMPLING DATE: 2/13/91
EPA CASE NO.: 15070 LAB: CEIMIC CORP.

SITE INSPECTION ANALYTICAL RESULTS
SUFFOLK AIRPORT C&D SITE
WEST HAMPTON BEACH, NEW YORK

PESTICIDES Sample ID No.	NYHT-S1(MS/MSD)	NYHT-S2	NYHT-S3	NYHT-S4	NYHT-S5	NYHT-S6	NYHT-S7	NYHT-S8	NYHT-S9	NYHT-S10	NYHT-S11(DUP)	NYHT-RIN1	NYHT-RIN2	NYHT-RIN3
Traffic Report No.	BFU89	BFU90	BFU91	BFU92	BFU93	BFU94	BFU95	BFU96	BFU97	BFU98	BFU99	BGC01	BGC02	BGC03
Matrix	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	WATER	WATER	WATER
Units	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/L	ug/L	ug/L
Dilution Factor/GPC Cleanup (Y)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Percent Moisture	0	7	5	5	7	7	11	0	15	1	6	--	--	--
alpha-BHC														
beta-BHC														
delta-BHC														
gamma-BHC (Lindane)														
Heptachlor														
Aldrin									J					
Heptachlor epoxide									10					
Endosulfan I							J							
Dieldrin														
4,4'-DDE		45			85	23					57			
Endrin														
Endosulfan II														
4,4'-DDD					21	38								
Endosulfan sulfate														
4,4'-DDT	130	160	130	48	280	420			29		100			J
Methoxychlor														
Endrin ketone														
alpha-Chlordane														
gamma-Chlordane														
Toxaphene														
Aroclor-1016														
Aroclor-1221														
Aroclor-1232														
Aroclor-1242														
Aroclor-1248														
Aroclor-1254														
Aroclor-1260														

NOTES:
Blank space - compound analyzed for but not detected
B - compound found in lab blank as well as sample, indicates possible/probable blank contamination
E - estimated value
J - estimated value, compound present below CRQL but above IDL
R - analysis did not pass EPA QA/QC
N - Presumptive evidence of the presence of the material
NR - analysis not required
Detection limits elevated if Dilution Factor >1 and/or percent moisture >0%

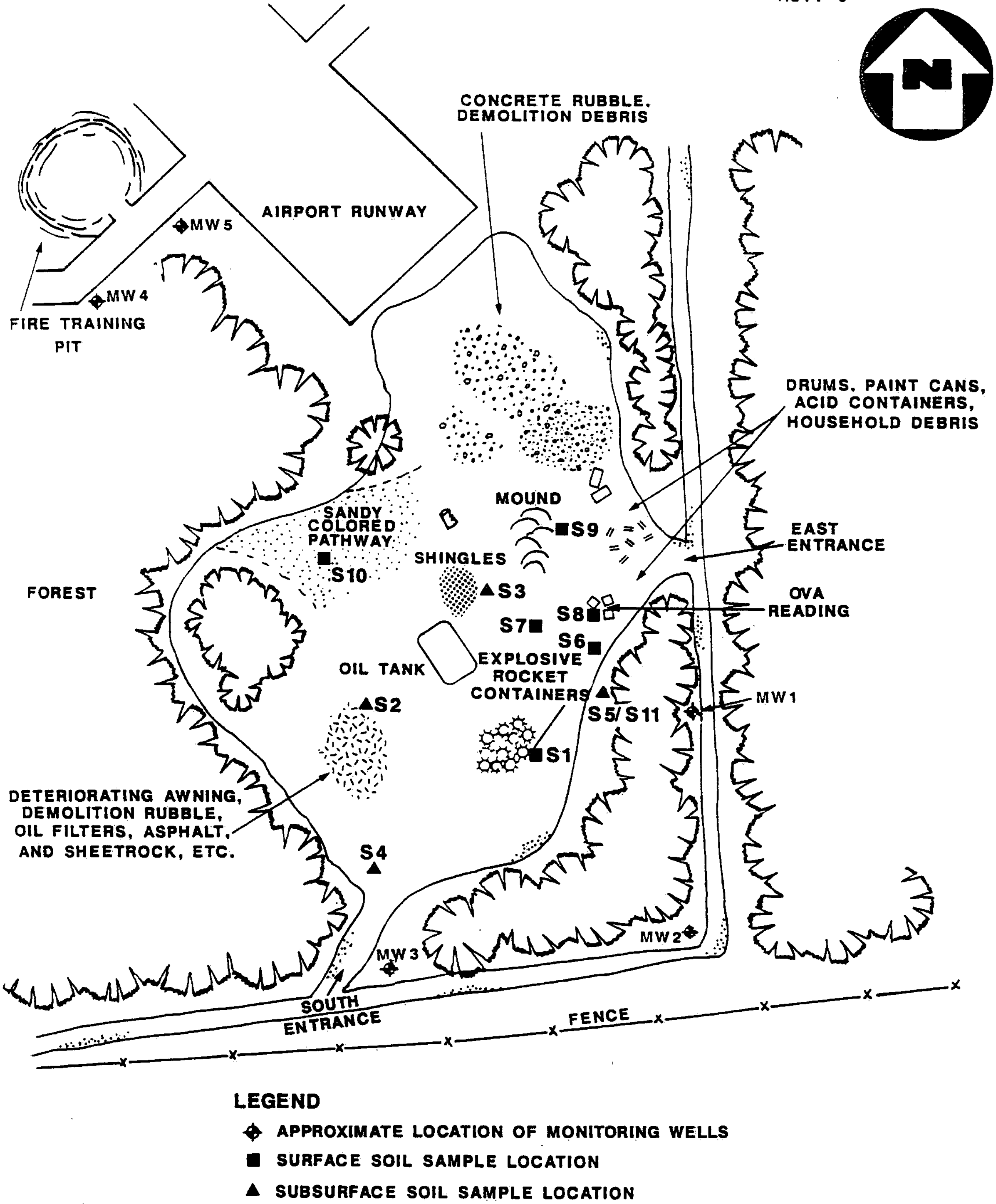
SITE NAME: SUFFOLK AIRPORT C&D SITE
TDD#: 02-9009-04
SAMPLING DATE: 2/13/91
EPA CASE NO.: 15870
LAB NAME: BETZ LABORATORIES

TABLE 1
SITE INSPECTION ANALYTICAL RESULTS
SUFFOLK AIRPORT C&D SITE
WEST HAMPTON BEACH, NEW YORK

INORGANICS Sample ID No. Traffic Report No. Matrix Units	NYNT-S1(MS/MSD) MBER32 SOIL mg/kg	NYNT-S2 MBER33 SOIL mg/kg	NYNT-S3 MBER34 SOIL mg/kg	NYNT-S4 MBER35 SOIL mg/kg	NYNT-S5 MBER36 SOIL mg/kg	NYNT-S6 MBER37 SOIL mg/kg	NYNT-S7 MBER38 SOIL mg/kg	NYNT-S8 MBER39 SOIL mg/kg	NYNT-S9 MBER40 SOIL mg/kg	NYNT-S10 MBER41 SOIL mg/kg	NYNT-S11(DUP) MBER42 SOIL mg/kg	NYNT-RIN1 MBER43 WATER ug/L	NYNT-RIN2 MBER44 WATER ug/L	NYNT-RIN3 MBER45 WATER ug/L
Aluminum	1720	2170	1930	1800	2450	2200	20500	2750	2120	1540	2370			
Antimony				J										
Arsenic	J	J	J	J	J	J	2.7 E	J	J	J	J			
Barium	J	J	J	J	J	J	1590	J	J	J	J			
Beryllium														
Cadmium	J			J			93.3	10.7	J					
Calcium	J	J	J	9410 E	J	J	J	J	J	J	J	J	J	J
Chromium	R	R	R	R	R	R	13.5 E	21.8 E	R	R	R	R	R	R
Cobalt		J	J	J			J	J	J	J	J			
Copper	J	J	31.6	J	9.7	5.6	855	J	19.4	J	11.1			
Iron	2350	2270	2340	7430	2750	2570	55600	4450	15000	1700	2500	J		
Lead	54.6 E	8.5 E	21.2 E	36.1	21.5	23.2	2980	58.5	58.2	4.7 E	10.7 E	J		
Magnesium	J	J	J	5420 E	J	J	J	J	J	J	J			
Manganese	29.9	15.8	24.9	58.4	25.3	14.3	353	22	89.7	7.5	18.7			
Mercury	0.16	0.1		0.28		0.15			0.17	0.1				
Nickel							9.5		J		J			
Potassium		J		J			J	J						
Selenium								J						
Silver							J							
Sodium	J	J	J	J	J	J	J	J	J	J	J	J	J	J
Thallium														
Vanadium	J	J	J	J	J	J	J	J	J	J	J			
Zinc	66.9 E	10.2 E	38.6 E	165 E	27.7 E	23.5 E	324 E	80.3 E	69.5 E	J	28.6 E		J	

NOTES:
Blank space - compound analyzed for but not detected
E - estimated value
J - estimated value, compound present below CRDL but above IDL
R - analysis did not pass EPA QA/QC
NR - analysis not required

02-9009-04-SI
Rev. 0



SAMPLE LOCATION MAP
SUFFOLK AIRPORT C & D SITE,
WESTHAMPTON BEACH, N.Y.
NOT TO SCALE

FIGURE 3

NUS CORPORATION

PART IV: HAZARD ASSESSMENT

GROUNDWATER ROUTE

1. **Describe the likelihood of a release of contaminant(s) to the groundwater as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence.**

Based on analytical results of soil samples collected from the C&D Site, a release of contaminants to groundwater is suspected. Actual waste handling practices by SCAFB during the time of operations is unknown. Background information indicates that the majority of waste disposed of on site were inert waste associated with construction, spent oil filters, oil and solvent cans, 55-gallon drums, and possibly buried munitions.

Fourteen soil samples were collected from the C&D Site by NUS Corporation Region 2 FIT on February 13, 1991. Groundwater monitoring wells could not be located; therefore, no groundwater samples were collected. Analytical results indicate the presence of toluene, ethylbenzene and xylenes at sample location NYNT-S8 with concentrations ranging from 120 to 960 micrograms per kilogram (ug/kg). Semivolatile analytical results indicate the presence of di-n-butylphthalate and butylbenzlphthalate at sample location NYNT-S8 at concentrations of 8,000 and 20,000 ug/kg respectively, and diethylphthalate at sample location NYNT-S7 at a concentration of 37,000 ug/kg. Inorganic analytical results indicate elevated levels of metals at sample location NYNT-S7 when compared to other samples collected on site. These include: aluminum, barium, cadmium, chromium, copper, iron, lead, manganese, magnesium and zinc. Analytical results for pesticides indicate the presence of 4, 4'- DDT in eight of the samples at concentrations ranging from 29 to 420 ug/kg. Considering the sandy nature of the soil at the site, these contaminants can be easily transported to groundwater below the site.

Ref. Nos. 4, 18, 25

2. **Describe the aquifer of concern; include information such as depth, thickness, geologic composition, areas of karst terrain, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction.**

The aquifer of concern is the unconsolidated deposits below the site known as the Upper Glacial Aquifer. These deposits consist of mostly outwash deposits consisting of stratified fine to coarse sand and gravel. Below these deposits is the Gardiner's Clay, consisting of solid clay and silt which serves to confine the underlying Magothy Formation aquifer. The Magothy Formation is composed of lenses of sand, sandy clay, clay and gravel. This formation is also a primary aquifer in the area. The sand and gravel of the Upper Glacial Aquifer that mantle the surface of Suffolk County range in thickness from 100 to 120 feet. The Gardiner's Clay is approximately 40 feet thick and of low hydraulic conductivity. The sand, sandy clay, and gravel of the Magothy Aquifer is approximately 800 feet in thickness. Groundwater movement of Suffolk County's aquifers is generally rapid because of the occurrence of interbedded fine - and coarse-grained layers, and because the largest dimensions of unevenly shaped materials in the individual layers tend to be oriented horizontally. Groundwater generally moves downward south-southeast from the Upper Glacial Aquifer into the Magothy Aquifer. Both the Upper Glacial and Magothy Aquifer are designated as the aquifer of concern. The wells on site were not located during NUS Corp. site inspection; therefore, actual depth to groundwater is unknown; however, well logs from 1982 indicate that the water level is approximately 15 feet.

Ref. Nos. 6, 7, 8, 27

3. **Is a designated well head protection area within 4 miles of the site?**

All of Long Island's primary aquifers are considered a designated well head protection area. The airport is also located within a "Deep Recharge Area" as defined by the Long Island 208 Study.

Ref. No. 9, 23

4. **What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern?**

The surficial waste disposed of on site by SCAFB included: concrete construction debris, spent oil filters, oil and solvent cans, partially buried 55-gallon drums, and possibly partially buried munitions. Analytical results indicate the presence of TCL contaminants in the surface soil. Depth to groundwater is approximately 15 feet. Therefore, depth from waste deposited to aquifer of concern is approximately 15 feet.

Ref. Nos. 4, 5, 10, 29

5. **What is the permeability value of the least permeable continuous intervening stratum between the ground surface and the aquifer of concern?**

The unconsolidated glacial deposits, which is the aquifer of concern, consist mostly of sand and gravel. The permeability associated with the sand and gravel is approximately 10^{-1} to 10^{-3} cm/sec. The Gardiners Clay layer is a confining unit of solid clay and silt separating the glacial deposits from the underlying Magothy formation. The permeability associated with clay and silt is approximately 10^{-5} to 10^{-9} cm/sec.

Ref. Nos. 6, 7, 8, 11

6. **What is the net precipitation for the area?**

The net annual precipitation for Westhampton is 45 inches.

Ref. Nos. 5, 12

7. **What is the distance to and depth of the nearest well that is currently used for drinking purposes?**

The nearest known drinking water well to the site is located in the Suffolk County Water Authority (SCWA) wellfield on Old Meeting House Road, approximately 2,000 feet south-southeast of the C&D Site; approximately 3,500 feet from the Canine Kennel Landfill, approximately 3,500 from the Fire Training Area, and approximately 1 mile from the Air National Guard Base. There are a total of twelve public supply wells within this wellfield. These wells supply approximately 35,580 people and have depths ranging from 46 to 78 feet.

Ref. Nos. 4, 13, 15, 30, 31, 33, 34

8. **If a release to groundwater is observed or suspected, determine the number of people that obtain drinking water from wells that are documented or suspected to be located within the contamination boundary of the release.**

Based on analytical results from soil samples collected from the C&D site, a release of contaminants to groundwater is suspected. There are no drinking water wells suspected of being within the contaminated boundary of the release.

Ref. Nos. 25, 30

9. **Identify the population served by wells located within 4 miles of the site that draw from the aquifer of concern.**

C & D Site

Distance	Population
0 - $\frac{1}{4}$ mi	0
>$\frac{1}{4}$ - $\frac{1}{2}$ mi	35,580
>$\frac{1}{2}$ - 1 mi	46
>1 - 2 mi	281
>2 - 3 mi	6,580
>3 - 4 mi	9,195

Canine Kennel Landfill

Distance	Population
0 - $\frac{1}{4}$ mi	0
>$\frac{1}{4}$ - $\frac{1}{2}$ mi	0
>$\frac{1}{2}$ - 1 mi	35,580
>1 - 2 mi	194
>2 - 3 mi	6,504
>3 - 4 mi	9,252

Air National Guard Base

Distance	Population
0 - $\frac{1}{4}$ mi	0
>$\frac{1}{4}$ - $\frac{1}{2}$ mi	0
>$\frac{1}{2}$ - 1 mi	46
>1 - 2 mi	36,006
>2 - 3 mi	15,159
>3 - 4 mi	1,100

Fire Training Area

Distance	Population
0 - $\frac{1}{4}$ mi	0
>$\frac{1}{4}$ - $\frac{1}{2}$ mi	0
>$\frac{1}{2}$ - 1 mi	35,580
>1 - 2 mi	152
>2 - 3 mi	6,470
>3 - 4 mi	9,032

The Suffolk Airport is the location of four areas of concern. The number of people on private and public supply wells are combined to identify the population served within 4 miles of each site. There is no population served by private and public supply wells within 0.25 mile of the sites.

Ref. Nos. 13, 14, 15, 30, 31, 32, 33, 34, 35

10. **Identify uses of groundwater within 4 miles of the site (i.e. private drinking source, municipal source, commercial, irrigation, unuseable).**

Groundwater use includes water for public and private supply, agriculture, and industry.

Ref. Nos. 4, 5, 30

SURFACE WATER ROUTE

11. **Describe the likelihood of a release of contaminant(s) to surface water as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence.**

There is a potential for a release of contaminants to surface water via groundwater discharge. The C & D site is approximately 1,500 feet from the Quantuck Creek and approximately 2,000 feet from Old Ice Pond. Due to high infiltration rates of the sandy surficial soils at the site there are no direct overland/flood migration pathways into the creek or pond. However, subsurface groundwater migration into both surface waters is suspected.

Ref. Nos. 4, 5, 13, 18, 25, 30

12. **Identify the nearest downslope surface water. If possible, include a description of possible surface drainage patterns from the site.**

The Quantuck Creek is the nearest downslope surface water. It flows in a southeasterly direction emptying into the Quantuck Bay. There is a potential for groundwater discharge from the C&D site to the creek. There is no direct overland drainage from the site to Quantuck Creek.

Ref. No. 13

13. **What is the distance to the nearest downslope surface water? Measure the distance along a course that runoff can be expected to follow.**

The nearest downslope surface water is the Quantuck Creek which flows southeast into the Quantuck Bay. The C&D site is approximately 1,500 feet from the creek with no direct drainage path. The most probable migration route to the Quantuck Creek is via groundwater discharge.

Ref. No. 13

14. **Determine the floodplain that the site is located within.**

All four areas of concern are located in areas designated as Flood Zone C, which are defined as areas of minimal flooding.

Ref. No. 16

15. **What is the 2-year 24-hour rainfall?**

The 2-year 24-hour rainfall is estimated to be 3.5 inches.

Ref. No. 17

16. **Identify drinking water intakes in surface waters within 15 miles downstream of the site. For each intake identify: the distance from the point of surface water entry, population served, and stream flow at the intake location.**

Intake	Distance	Population Served	Flow (cfs)

There are no surface water intakes existing in surface waters within 15 miles downstream of the site.

Ref. Nos. 13, 30

17. **Identify fisheries that exist within 15 miles downstream of the point of surface water entry. For each fishery specify the following information:**

Fishery	Water Body Type	Flow (cfs)
Quantuck Creek	Creek	2.4
Aspatuck Creek	Creek	2.4

Groundwater flow is in a south southeasterly direction. Quantuck Creek is located south east of the C&D Site and may be impacted via discharge of contaminated groundwater. Aspatuck Creek is located south of the ANG Base and may be impacted from potential groundwater discharge from this area.

Ref. No. 13, 19, 24, 26

18. Identify sensitive environments that exist within 15 miles of the point of surface water entry. For each sensitive environment specify the following:

Environment	Water Body Type	Flow (cfs)
Quogue Wildlife Refuge	Pond	NA
Quantuck Creek Wetlands	Creek	2.4
Aspatuck Creek Wetlands	Creek	2.4

Groundwater flow is in a south-southeasterly direction. Aspatuck Creek is located south southeast of the Air National Guard Base and may be impacted via discharge of contaminated groundwater.

Ref. Nos. 13, 19, 20, 26

19. If a release to surface water is observed or suspected, identify any intakes, fisheries, and sensitive environments from question Nos. 16-18 that are or may be located within the contamination boundary of the release.

Intake	Fishery	Environment
None	Quantuck Creek	Quogue Wildlife Refuge
	Aspatuck Creek	Quantuck Creek Wetlands
		Aspatuck Creek Wetlands

There are no known analytical data that indicate a release from the open dump to surface water. In all likelihood, there is a potential for a release to surface water via groundwater discharge into Old Ice Pond, Quantuck Creek, and Aspatuck Creek. These areas may be within the contaminated zone.

Ref. Nos. 13, 19, 20, 24, 26, 30

SOIL EXPOSURE PATHWAY

20. Determine the number of people that occupy residences or attend school or day care on or within 200 feet of the site property.

There are no people that occupy residences or attend school or day care on or within 200 feet of the C & D Site, the Canine Kennel Site, the Fire Training Area, or the Air National Guard Base.

Ref. Nos. 13, 18, 28, 30, 31

21. Determine the number of people that work on or within 200 feet of the site property.

There are four areas of concern within the airport: the C&D Site, Canine Kennel Landfill, and the Fire training area, which are located in the southeastern portion of the airport, and the Air National Guard Base which is located in the southwestern corner of the airport. Although these four areas are inactive, access roads that encompass these sites are used by on-site employees as a thoroughfare for work conducted within the airport grounds. There are between 500 to 600 employees working on the airport grounds, mostly in the vicinity of the entrance to the airport, located west of the runways. The majority of work is conducted in this area.

Ref. Nos. 4, 14, 21

22. Identify terrestrial sensitive environments on or within 200 feet of the site property.

Based on information provided by the Suffolk County Department of Health Services, Suffolk County Airport provides habitat and breeding for several New York State threatened and special concern avian species. It is confirmed that the site is utilized as a nesting area for the Upland Sandpiper (Bartramia Longieavda), and that the Grasshopper Sparrow (Ammodrammus Savannarum) habitats and breeds along the adjacent grasslands of the airport. The airport also provides significant foraging range for the Northern Harrier (Circus Cyaneus) which has been confirmed to breed north of the airport. The Quogue Wildlife Refuge is located approximately 1,000 feet east of the C&D Site. Portions of the airport are characterized by dwarf pine plains which are a globally rare ecosystem which is recognized by the New York State Natural Heritage Program.

Ref. Nos. 13, 22, 23

AIR ROUTE

23. Describe the likelihood of release of contaminants to air as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release define the supporting analytical evidence.

There is presently little potential for a release of contaminants to the air.

Ref. Nos. 4, 18, 30

24. Determine populations that reside within 4 miles of the site.

C & D Site

Distance	Population
0 - $\frac{1}{4}$ mi	0
>$\frac{1}{4}$ - $\frac{1}{2}$ mi	0
>$\frac{1}{2}$ - 1 mi	398
>1 - 2 mi	2,510
>2 - 3 mi	3,630
>3 - 4 mi	1,572

Canine Kennel Landfill

Distance	Population
0 - $\frac{1}{4}$ mi	0
>$\frac{1}{4}$ - $\frac{1}{2}$ mi	0
>$\frac{1}{2}$ - 1 mi	742
>1 - 2 mi	1,227
>2 - 3 mi	4,038
>3 - 4 mi	3,614

Air National Gurad Base

Distance	Population
0 - $\frac{1}{4}$ mi	0
>$\frac{1}{4}$ - $\frac{1}{2}$ mi	0
>$\frac{1}{2}$ - 1 mi	297
>1 - 2 mi	3,415
>2 - 3 mi	2,001
>3 - 4 mi	5,582

Fire Training Area

Distance	Population
0 - $\frac{1}{4}$ mi	0
>$\frac{1}{4}$ - $\frac{1}{2}$ mi	0
>$\frac{1}{2}$ - 1 mi	742
>1 - 2 mi	2,953
>2 - 3 mi	2,869
>3 - 4 mi	1,546

Ref. No. 3

25. **Identify sensitive environments and wetlands acreage within 1/2 mile of the site.**

Sensitive Environment Type	Distance
Quogue Wildlife Refuge	1,000 feet
Old Ice Pond	2,000 feet
Quantuck Creek Wetlands	1,500 feet

New York State listed special concern species in the vicinity of the Quogue Wildlife Refuge include the upland sandpiper and the grasshopper sparrow. Among the New York State listed threatened species are the northern harrier. State listed fauna in the vicinity of the Old Ice Pond and Quantuck Creek, which are located within the grounds of the Refuge include the bay scallop, the hard clam, and the winter flounder. The exact locations of their respective habitats are unknown. There are no known federally listed endangered species on or within 0.5 mile of the site.

Ref. Nos. 13, 20, 22, 23, 24

26. **If a release to air is observed or suspected, determine the number of people that reside or are suspected to reside within the area of air contamination from the release.**

No release to air is observed or suspected.

Ref. Nos. 4, 18, 30

27. **If a release to air is observed or suspected, identify any sensitive environments, listed in question No. 25, that are or may be located within the area of air contamination from the release.**

No release to air is observed or suspected.

Ref. Nos. 4, 18, 30

ATTACHMENT 1

EXHIBIT A

PHOTOGRAPH LOG

SUFFOLK AIRPORT C&D SITE
WESTHAMPTON BEACH, NEW YORK

ON-SITE RCONNAISSANCE: JANUARY 16, 1991

SUFFOLK AIRPORT C&D SITE
WESTHAMPTON BEACH, NEW YORK
JANUARY 16, 1991

PHOTOGRAPH INDEX

ALL PHOTOGRAPHS WERE TAKEN BY J. TORCHIA

Photo Number	Description	Time
1P-2	Photo of entrance into landfill area. Note: Drums, paint cans, rubber tires, household debris.	1115
1P-4	Photo of drums near entrance of landfill.	1124
1P-5	Photo of a pile of clay-like materials.	1126
1P-6,7	Panoramic view of entire landfill area.	1135
1P-8	Photo of drums and household debris throughout trees along the perimeter of landfill.	1140
1P-9	Photo of deteriorating drum.	1142
1P-11	Photo of shingles near the center of the landfill.	1150
1P-12	Photo of an oil tank lying adjacent to the shingles.	1155
1P-13	Photo of a deteriorating shed with metallic debris.	1157
1P-14	Photo of fire extinguishing fluid in a blue container.	1200
1P-15	Photo of explosive rocket containers.	1203

SUFFOLK AIRPORT C&D SITE, WESTHAMPTON BEACH, NEW YORK

1P-2 January 16, 1991 1115
Photo of entrance into landfill area. Note: Drums, paint cans, rubber tires, household debris.

SUFFOLK AIRPORT C&D SITE, WESTHAMPTON BEACH, NEW YORK

1P-4 January 16, 1991 1124
Photo of drums near entrance of landfill.

1P-5 January 16, 1991 1126
Photo of a pile of clay-like materials.

SUFFOLK AIRPORT C&D SITE, WESTHAMPTON BEACH, NEW YORK

1P-6,7 January 16, 1991 1135
Panoramic view of entire landfill area.

SUFFOLK AIRPORT C&D SITE, WESTHAMPTON BEACH, NEW YORK

1P-8 January 16, 1991 1140
Photo of drums and household debris throughout trees along the perimeter of landfill.

1P-9 January 16, 1991 1142
Photo of deteriorating drum.

NUS CORPORATION

SUFFOLK AIRPORT C&D SITE, WESTHAMPTON BEACH, NEW YORK

1P-11 January 16, 1991 1150
Photo of shingles near the center of the landfill.

SUFFOLK AIRPORT C&D SITE, WESTHAMPTON BEACH, NEW YORK

1P-12 January 16, 1991 1155
Photo of an oil tank lying adjacent to the shingles.

1P-13 January 16, 1991 1157
Photo of a deteriorating shed with metallic debris.

SUFFOLK AIRPORT C&D SITE, WESTHAMPTON BEACH, NEW YORK

1P-14 January 16, 1991 1200
Photo of fire extinguishing fluid in a blue container.

1P-15 January 16, 1991 1203
Photo of explosive rocket containers.

EXHIBIT A

PHOTOGRAPH LOG

SUFFOLK AIRPORT C&D SITE
WESTHAMPTON BEACH, NEW YORK

ON-SITE SAMPLING: FEBRUARY 13, 1991

SUFFOLK AIRPORT C&D SITE
WESTHAMPTON BEACH, NEW YORK
FEBRUARY 13, 1991

PHOTOGRAPH INDEX

ALL PHOTOGRAPHS WERE TAKEN BY J. TORCHIA

Photo Number	Description	Time
1P-1	Maria Coler collecting surface soil sample NYNT-S1.	1053
1P-2	Photo documentation to better verify location of sample location NYNT-S1.	1100
1P-3	Dave Florin collecting subsurface soil sample NYNT-S2.	1112
1P-4	Photo documentation to better verify location of sample location NYNT-S2.	1121
1P-5	Photo documentation to better verify location of sample location NYNT-S3.	1130
1P-6	Maria Coler collecting subsurface soil sample NYNT-S3.	1132
1P-7	Photo of a pile of paint containers in a depressed area from sample location NYNT-S4.	1200
1P-8	Dave Florin collecting subsurface soil sample NYNT-S4.	1202
1P-9	Maria Coler collecting subsurface soil samples NYNT-S5 and NYNT-S11.	1212
1P-10	Photo documentation to better verify location of sample location NYNT-S5 and NYNT-S11.	1216
1P-12	Photo of sample location NYNT-S6. Note: Rocket packing containers.	1231
1P-13	Dave Florin collecting surface soil sample NYNT-S6.	1235
1P-14	Maria Coler collecting surface soil sample NYNT-S7.	1310
1P-15	Photo of sample location NYNT-S7. Note: Contents of rockets.	1313
1P-16	Dave Florin collecting surface soil sample NYNT-S8.	1327
1P-17	Photo of sample location NYNT-S8. Note: Black resin seeping out of middle drum.	1332
1P-18	Maria Coler collecting surface soil sample NYNT-S9.	1340
1P-19	Photo of sample location NYNT-S9. Note: Concrete demolition in background.	1345
1P-20	Dave Florin collecting surface soil sample NYNT-S10.	1400
1P-21	Photo of sample location NYNT-S10. Note: Soil is very sandy.	1403

SUFFOLK AIRPORT C&D SITE, WESTHAMPTON BEACH, NEW YORK

1P-1 February 13, 1991 1053
Maria Coler collecting surface soil sample NYNT-S1.

1P-2 February 13, 1991 1100
Photo documentation to better verify location of sample location NYNT-S1.

SUFFOLK AIRPORT C&D SITE, WESTHAMPTON BEACH, NEW YORK

1P-3 February 13, 1991 1112
Dave Florin collecting subsurface soil sample NYNT-S2.

1P-4 February 13, 1991 1121
Photo documentation to better verify location of sample location NYNT-S2.

SUFFOLK AIRPORT C&D SITE, WESTHAMPTON BEACH, NEW YORK

1P-5 February 13, 1991 1130
Photo documentation to better verify location of sample location NYNT-S3.

1P-6 February 13, 1991 1132
Maria Coler collecting subsurface soil sample NYNT-S3.

SUFFOLK AIRPORT C&D SITE, WESTHAMPTON BEACH, NEW YORK

1P-7 February 13, 1991 1200
Photo of a pile of paint containers in a depressed area from sample location NYNT-S4.

1P-8 February 13, 1991 1202
Dave Florin collecting subsurface soil sample NYNT-S4.

SUFFOLK AIRPORT C&D SITE, WESTHAMPTON BEACH, NEW YORK

1P-9 February 13, 1991 1212
Maria Coler collecting subsurface soil samples NYNT-S5 and NYNT-S11.

1P-10 February 13, 1991 1216
Photo documentation to better verify location of sample location NYNT-S5 and NYNT-S11.

SUFFOLK AIRPORT C&D SITE, WESTHAMPTON BEACH, NEW YORK

1P-12 February 13, 1991 1231
Photo of sample location NYNT-S6. Note: Rocket packing containers.

1P-13 February 13, 1991 1235
Dave Florin collecting surface soil sample NYNT-S6.

SUFFOLK AIRPORT C&D SITE, WESTHAMPTON BEACH, NEW YORK

1P-14 February 13, 1991 1310
Maria Coler collecting surface soil sample NYNT-S7.

1P-15 February 13, 1991 1313
Photo of sample location NYNT-S7. Note: Contents of rockets.

SUFFOLK AIRPORT C&D SITE, WESTHAMPTON BEACH, NEW YORK

1P-18 February 13, 1991 1340
Maria Coler collecting surface soil sample NYNT-S9.

1P-19 February 13, 1991 1345
Photo of sample location NYNT-S9. Note: Concrete demolition in background.

SUFFOLK AIRPORT C&D SITE, WESTHAMPTON BEACH, NEW YORK

1P-20 February 13, 1991 1400
Dave Florin collecting surface soil sample NYNT-S10.

1P-21 February 13, 1991 1403
Photo of sample location NYNT-S10. Note: Soil is very sandy.

ATTACHMENT 2

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9. Telecon Note: Conversation between Audry Moore, Office of Groundwater, U.S. Environmental Protection Agency, Region 2, and Gerald J. Hannay, NUS Corp., Region 2 November 6, 1990.

10. New York Testing Laboratories, Inc. Analytical Reports, Suffolk County Airport Landfill Area, Soil Boring Results, March 1982.

11. Freeze, R. A. and J.A. Cherry. Groundwater. New Jersey, Prentice-Hall, 1979.

12. Hazard Ranking System (HRS) Field Test Project, net precipitaiton data, January 1988.

13. Four-Mile Vicinity Map for Suffolk Airport C & D Site, Canine Kennel Landfill, Air National Guard Base, Fire Training Area, based on U.S. Geological Survey Topographical Maps, 7.5 minute series, "Quogue Qudrangle, N.Y.," 1956; "Mattituck Qudrangle, N.Y.," 1956; Riverhead Quadrangle, N.Y., " 1956; "Eastport Quadrangle, N.Y.,"1956.

14. Telecon Note: Conversation between Joseph Latrente, Suffolk Airport Aviation Division, and Joanne Torchia, NUS Corp. Region 2, May 5, 1991.

15. Telecon Note: Conversation between Mrs. Mansey, Suffolk County Water Authority, and Joanne Torchia, NUS Corp. Region 2, April 24, 1991.

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31. Suffolk County Water Authority Distribution System Maps, Four-Mile Vicinity Map for Suffolk Airport C & D Site, Canine Kennel Landfill, Air National Guard Base, and Fire Training Area. Date Unknown.

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32. Project Note: To Suffolk Airport C & D Site File, From Joanne Torchia NUS Corp. Subject: Private wells within a 4-mile radius, July 8, 1991.

33. Project Note: To Suffolk Airport C&D Site File, From Joanne Torchia NUS Corp. Subject: Population served by groundwater wells within a 4-mile radius, July 15, 1991.

34. Telecon Note: Conversation between Mrs. Mansey, Suffolk County Water Authority, and Joanne Torchia, NUS Corp. Region 2 , July 15, 1991.

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REFERENCE NO. 1

PA ID NO.	SITE NAME / STREET / CITY / COUNTY CODE AND NAME	STATE ZIP CONG DIST.	NFA. FLAG	OPRBLE UNIT	EVENT TYPE	ACTUAL START DATE	ACTUAL COMPL DATE	CURRENT EVENT LEAD
D980509202	STONY POINT LF		NFA	00	DS1		03/01/80	EPA (FUND)
	E OF RTE 9W				PA1		03/05/87	STATE(FUND)
	STONY POINT	NY 10980						
	087 ROCKLAND							
D982268815	SUDAKOW DUMP			00	DS1		05/20/87	STATE(FUND)
	WILLIAMS STREET				PA1		06/08/87	STATE(FUND)
	FRANKFORT	NY 13340						
	043 HERKIMER							
D980780878	SUFFERN VILLAGE WELL FIELD			00	RS1	04/16/90	08/13/90	EPA (FUND)
	NORTH END OF RAMAPO AVENUE				DS1		09/01/84	STATE(FUND)
	SUFFERN	NY 10901			PA1		09/01/84	STATE(FUND)
	087 ROCKLAND				NP1		10/01/84	EPA (FUND)
					NF1		06/01/86	EPA (FUND)
					SI1	11/01/84	12/01/84	STATE(FUND)
				01	WP1	03/29/85	12/31/85	STATE(FUND)
					CO1	03/29/85	09/25/87	STATE(FUND)
					RO1		09/25/87	STATE(FUND)
					ED1		08/06/87	STATE(FUND)
					OM1	09/30/88		STATE(FUND)
D981186943	SUFFOLK AIRPORT C & D SITE			00	DS1		03/27/86	STATE(FUND)
	OLD RIVERHEAD ROAD				PA1	07/06/87	07/09/87	STATE(FUND)
	WESTHAMPTON(T.O.S.HAMPTON	NY 11978						
	103 SUFFOLK							
D986866432	SUFFOLK COUNTY AIRPORT TRAINING AREA			00	DS1		05/03/88	STATE(FUND)
	OLD RIVERHEAD ROAD				PA1	05/18/90	06/29/90	STATE(FUND)
	SOUTHHAMPTON	NY 11968						
	103 SUFFOLK							
2572824249	SUFFOLK COUNTY ANG BASE			00	DS1		10/15/85	EPA (FUND)
	SUFFOLK COUNTY AIRPORT				SI1		10/30/88	STATE(FUND)
	WESTHAMPTON BEACH,NY	NY 11978-1294		01				
	103 SUFFOLK							
D003797248	SUFFOLK MATERIALS MINING CORP.			00	DS1		03/25/86	STATE(FUND)
	CONSEWOGUE ROAD				PA1		03/27/86	STATE(FUND)
	EAST SETAUKET	NY 11733			SI1	07/20/89	09/25/89	EPA (FUND)
	103 SUFFOLK							

REFERENCE NO. 2

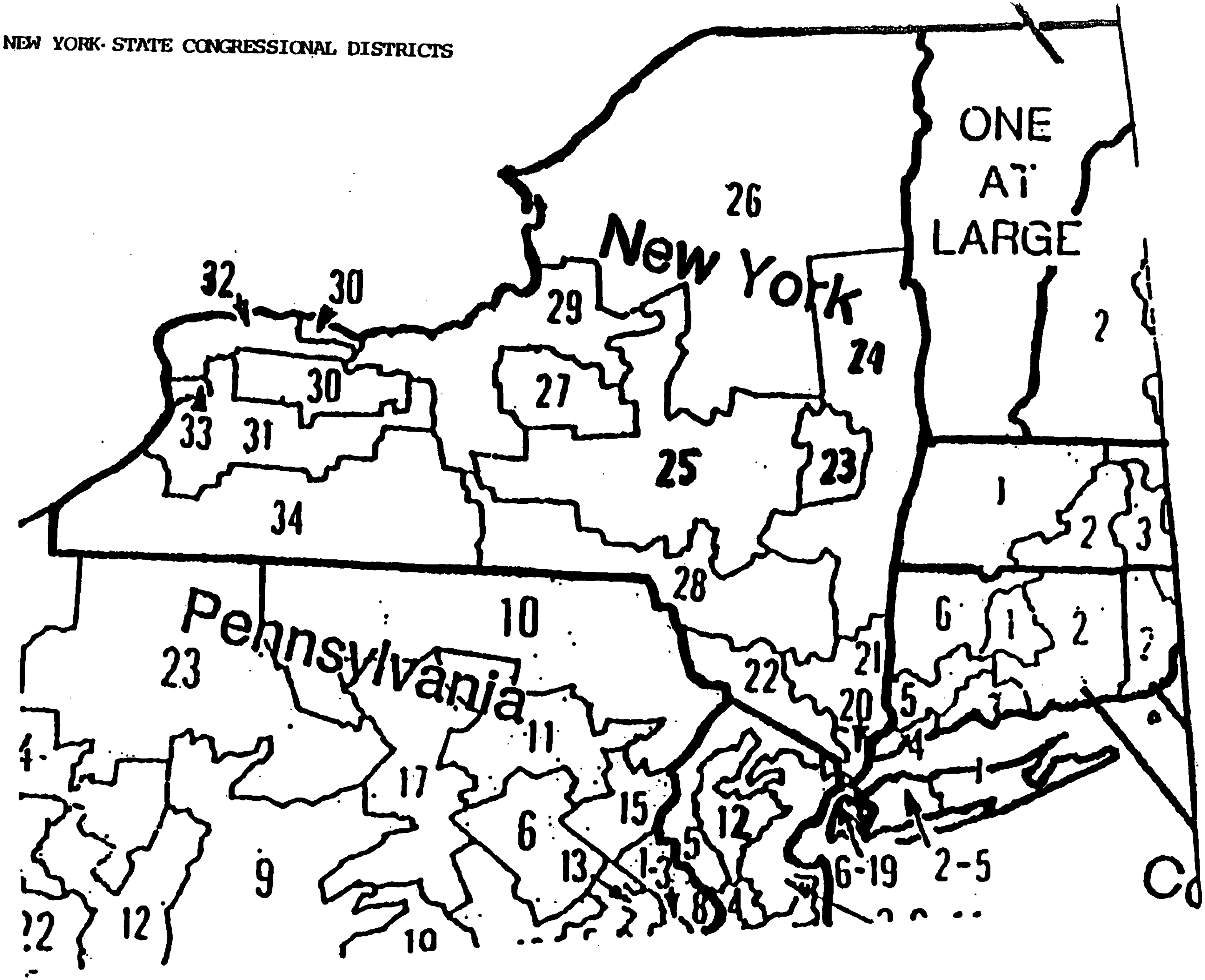
NEW YORK

Congressional District Identification—Continued

Table 1. MUNICIPALITIES—Continued

Municipality	County	Congressional district
RENSSELAER FALLS VILLAGE	ST. LAWRENCE	.26
RHINEBECK VILLAGE	DUTCHESS	.24
RICHBURG VILLAGE	ALLEGANY	.34
RICHFIELD SPRINGS VILLAGE	OTSEGO	.25
RICHMONDVILLE VILLAGE	SCHOHARIE	.25
RICHVILLE VILLAGE	ST. LAWRENCE	.26
RIVERSIDE VILLAGE	STEUBEN	.34
ROCHESTER CITY	MONROE	.29,30,32
ROCKVILLE CENTRE VILLAGE	NASSAU	5
ROME CITY	ONEIDA	.25
ROSLYN VILLAGE	NASSAU	3
ROSLYN ESTATES VILLAGE	NASSAU	3
ROSLYN HARBOR VILLAGE	NASSAU	3
ROUND LAKE VILLAGE	SARATOGA	.24
ROUSES POINT VILLAGE	CLINTON	.26
RUSHVILLE VILLAGE	ONTARIO	.31
	YATES	.34
RUSSELL GARDENS VILLAGE	NASSAU	3
RYE CITY	WESTCHESTER	.20
SACKETS HARBOR VILLAGE	JEFFERSON	.26
SADDLE ROCK VILLAGE	NASSAU	8
SAG HARBOR VILLAGE	SUFFOLK	1
ST. JOHNSVILLE VILLAGE	MONTGOMERY	.25
SALAMANCA CITY	CATTARAUGUS	.34
SALEM VILLAGE	WASHINGTON	.24
SALTAIRE VILLAGE	SUFFOLK	2
SANDS POINT VILLAGE	NASSAU	3
SANDY CREEK VILLAGE	OSWEGO	.29
SARANAC LAKE VILLAGE	ESSEX	.26
	FRANKLIN	.26
SARATOGA SPRINGS CITY	SARATOGA	.24
SAUGERTIES VILLAGE	ULSTER	.28
SAVONA VILLAGE	STEUBEN	.34
SCARSDALE VILLAGE	WESTCHESTER	.20
SCHAGHTICOKE VILLAGE	RENSSELAER	.24
SCHENECTADY CITY	SCHENECTADY	.23
SCHENEVUS VILLAGE	OTSEGO	.25
SCHOHARIE VILLAGE	SCHOHARIE	.25
SCHUYLERVILLE VILLAGE	SARATOGA	.24
SCOTIA VILLAGE	SCHENECTADY	.23
SCOTTSVILLE VILLAGE	MONROE	.30
SEA CLIFF VILLAGE	NASSAU	3
SENECA FALLS VILLAGE	SENECA	.29
SHARON SPRINGS VILLAGE	SCHOHARIE	.25
SHERBURNE VILLAGE	CHENANGO	.25
SHERMAN VILLAGE	CHAUTAUQUA	.34
SHERRILL CITY	ONEIDA	.25
SHOREHAM VILLAGE	SUFFOLK	1
SHORTSVILLE VILLAGE	ONTARIO	.30
SIDNEY VILLAGE	DELAWARE	.25
SILVER CREEK VILLAGE	CHAUTAUQUA	.34
SILVER SPRINGS VILLAGE	WYOMING	.31
SINCLAIRVILLE VILLAGE	CHAUTAUQUA	.34
SKANEATELES VILLAGE	ONONDAGA	.27
SLOAN VILLAGE	ERIE	.33
SLOATSBURG VILLAGE	ROCKLAND	.22
SMYRNA VILLAGE	CHENANGO	.25
SODUS VILLAGE	WAYNE	.29
SODUS POINT VILLAGE	WAYNE	.29
SOLVAY VILLAGE	ONONDAGA	.27
SOUTHAMPTON VILLAGE	SUFFOLK	1
SOUTH CORNING VILLAGE	STEUBEN	.34
SOUTH DAYTON VILLAGE	CATTARAUGUS	.34
SOUTH FLORAL PARK VILLAGE	NASSAU	5
SOUTH GLENS FALLS VILLAGE	SARATOGA	.24
SOUTH NYACK VILLAGE	ROCKLAND	.22
SPECULATOR VILLAGE	HAMILTON	.26
SPENCER VILLAGE	TIOGA	.28
SPENCERPORT VILLAGE	MONROE	.32
SPRING VALLEY VILLAGE	ROCKLAND	.22
SPRINGVILLE VILLAGE	ERIE	.31
STAMFORD VILLAGE	DELAWARE	.25
STEWART MANOR VILLAGE	NASSAU	5
STILLWATER VILLAGE	SARATOGA	.24
SUFFERN VILLAGE	ROCKLAND	.22
SYLVAN BEACH VILLAGE	ONEIDA	.29
SYRACUSE CITY	ONONDAGA	.27
TANNERSVILLE VILLAGE	GREENE	.24
TARRYTOWN VILLAGE	WESTCHESTER	.22
THERESA VILLAGE	JEFFERSON	.26
THOMASTON VILLAGE	NASSAU	3
TICONDEROGA VILLAGE	ESSEX	.26
TIVOLI VILLAGE	DUTCHESS	.24
TONAWANDA CITY	ERIE	.32
TROY CITY	RENSSELAER	.23
TRUMANSBURG VILLAGE	TOMPKINS	.28
TUCKAHOE VILLAGE	WESTCHESTER	.20
TULLY VILLAGE	ONONDAGA	.27
TUPPER LAKE VILLAGE	FRANKLIN	.26
TURIN VILLAGE	LEWIS	.26
TUXEDO PARK VILLAGE	ORANGE	.22
UNADILLA VILLAGE	OTSEGO	.25
UNION SPRINGS VILLAGE	CAYUGA	.29
UNIONVILLE VILLAGE	ORANGE	.22
UPPER BROOKVILLE VILLAGE	NASSAU	3
UPPER NYACK VILLAGE	ROCKLAND	.22
UTICA CITY	ONEIDA	.25
VALATIE VILLAGE	COLUMBIA	.24
VALLEY FALLS VILLAGE	RENSSELAER	.24
VALLEY STREAM VILLAGE	NASSAU	5
VAN ETTEN VILLAGE	CHEMUNG	.34
VERNON VILLAGE	ONEIDA	.25
VICTOR VILLAGE	ONTARIO	.30
VICTORY VILLAGE	SARATOGA	.24
VILLAGE OF THE BRANCH VILLAGE	SUFFOLK	1
VOORHEESVILLE VILLAGE	ALBANY	.23
WADDINGTON VILLAGE	ST. LAWRENCE	.26
WALDEN VILLAGE	ORANGE	.21
WALTON VILLAGE	DELAWARE	.25
WAMPSVILLE VILLAGE	MADISON	.27
WAPPINGERS FALLS VILLAGE	DUTCHESS	.21
WARSAW VILLAGE	WYOMING	.31
WARWICK VILLAGE	ORANGE	.22
WASHINGTONVILLE VILLAGE	ORANGE	.21
WATERFORD VILLAGE	SARATOGA	.24
WATERLOO VILLAGE	SENECA	.29
WATERTOWN CITY	JEFFERSON	.26
WATERVILLE VILLAGE	ONEIDA	.25
WATERVLIET CITY	ALBANY	.23
WATKINS GLEN VILLAGE	SCHUYLER	.34
WAVERLY VILLAGE	TIOGA	.28
WAYLAND VILLAGE	STEUBEN	.34
WEBSTER VILLAGE	MONROE	.29
WEEDSPORT VILLAGE	CAYUGA	.29
WELLSBURG VILLAGE	CHEMUNG	.34
WELLSVILLE VILLAGE	ALLEGANY	.34
WESTBURY VILLAGE	NASSAU	3,4
WEST CARTHAGE VILLAGE	JEFFERSON	.26
WESTFIELD VILLAGE	CHAUTAUQUA	.34
WESTHAMPTON BEACH VILLAGE	SUFFOLK	1
WEST HAVERSTRAW VILLAGE	ROCKLAND	.22
WESTPORT VILLAGE	ESSEX	.26
WEST WINFIELD VILLAGE	HERKIMER	.26
WHITEHALL VILLAGE	WASHINGTON	.24
WHITE PLAINS CITY	WESTCHESTER	.20
WHITESBORO VILLAGE	ONEIDA	.25
WHITNEY POINT VILLAGE	BROOME	.28
WILLIAMSVILLE VILLAGE	ERIE	31,33
WILLISTON PARK VILLAGE	NASSAU	3
WILSON VILLAGE	NIAGARA	.32
WINDSOR VILLAGE	BROOME	.28
WOLCOTT VILLAGE	WAYNE	.29
WOODHULL VILLAGE	STEUBEN	.34
WOODRIDGE VILLAGE	SULLIVAN	.28
WOODSBURGH VILLAGE	NASSAU	5
WURTSBORO VILLAGE	SULLIVAN	.22
WYOMING VILLAGE	WYOMING	.31
YONKERS CITY	WESTCHESTER	19,20
YORKVILLE VILLAGE	ONEIDA	.25
YOUNGSTOWN VILLAGE	NIAGARA	.32

NEW YORK STATE CONGRESSIONAL DISTRICTS



REFERENCE NO. 3

GSC-TR8645

GRAPHICAL EXPOSURE MODELING SYSTEM

(GEMS)

USER'S GUIDE

VOLUME 2. MODELING

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDES AND TOXIC SUBSTANCES
EXPOSURE EVALUATION DIVISION
Task No. 3-2
Contract No. 68023970
Project Officer: Russell Kinerson
Task Manager: Loren Hall

Prepared by:

GENERAL SCIENCES CORPORATION
8401 Corporate Drive
Landover, Maryland 20785

Submitted: December 1, 1986

GEMS> I

SUFFOLK AIRPORT C&D SITE
LATITUDE 40:50: 7 LONGITUDE 72:37:30 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	398	2510	3630	1572	8110
RING TOTALS	0	0	398	2510	3630	1572	8110

GEMS> I

SUFFOLK AIRPORT C&D SITE
LATITUDE 40:50: 7 LONGITUDE 72:37:30 1980 HOUSING

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	166	1000	1433	646	3245
RING TOTALS	0	0	166	1000	1433	646	3245

Population	0	0	398	2510	3630	1572
Housing	0	0	166	1000	1433	646

1

SUFFOLK AIRPORT CANINE KENNEL LANDFILL
LATITUDE 40:50:20 LONGITUDE 72:37:21 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	742	1227	4038	3614	9621
RING TOTALS	0	0	742	1227	4038	3614	9621

1

SUFFOLK AIRPORT CANINE KENNEL LANDFILL
LATITUDE 40:50:20 LONGITUDE 72:37:21 1980 HOUSING

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	280	496	1605	1477	3858
RING TOTALS	0	0	280	496	1605	1477	3858

	0 - 1/4 mi	1/4 - 1/2 mi	1/2 - 1 mi	1 - 2 mi	2 - 3 mi	3 - 4 mi
Population	0	0	742	1227	4038	3614
Housing	0	0	280	496	1605	1477

GEMS> I

SUFFOLK AIRPORT FIRE TRAINING AREA
LATITUDE 40:50:14 LONGITUDE 72:37:44 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	742	2953	2869	1546	8110
RING TOTALS	0	0	742	2953	2869	1546	8110

· I

SUFFOLK AIRPORT FIRE TRAINING AREA
LATITUDE 40:50:14 LONGITUDE 72:37:44 1980 HOUSING

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	280	1126	1199	640	3245
RING TOTALS	0	0	280	1126	1199	640	3245

	0-1/4 mi	1/4-1/2 mi	1/2-1 mi	1-2 mi	2-3 mi	3-4 mi
Population	0	0	742	2953	2869	1546
Housing	0	0	280	1126	1199	640

1

SUFFOLK AIRPORT AIR NATIONAL GUARD BASE
LATITUDE 40:50:14 LONGITUDE 72:38:32 1980 POPULATION

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	297	3415	2001	5582	11295
RING TOTALS	0	0	297	3415	2001	5582	11295

1

SUFFOLK AIRPORT AIR NATIONAL GUARD BASE
LATITUDE 40:50:14 LONGITUDE 72:38:32 1980 HOUSING

KM	0.00-.400	.400-.810	.810-1.60	1.60-3.20	3.20-4.80	4.80-6.40	SECTOR TOTALS
S 1	0	0	106	1294	868	2193	4461
RING TOTALS	0	0	106	1294	868	2193	4461

	0 - 1/4 mi	1/4 - 1/2 mi	1/2 - 1 mi	1 - 2 mi	2 - 3 mi	3 - 4 mi
Population	0	0	297	3415	2001	5582
Housing	0	0	106	1294	868	2193

REFERENCE NO. 4

EXECUTIVE SUMMARY

INTRODUCTION

This report presents the results of the Installation Restoration Program (IRP) Phase I - Records Search for Suffolk County Airport (SCA)--formerly Suffolk County Air Force Base (SCAFB)--in Westhampton Beach, New York. The purpose of the Phase I study is to identify and assess sites posing potential threat to human health or to the environment due to contamination from past handling of hazardous materials.

Historically, SCAFB was activated in 1951 and operated by the U.S. Air Force (USAF) until official closing in 1969; deactivation continued through July 1970. With the closing of the base, most of the land was reacquired by Suffolk County and the airfield operated as SCA. In 1971 the Air National Guard (ANG) leased approximately 70 acres of building sites and aircraft working areas of the former SCAFB from SCA for its present mission of aerospace rescue and recovery. Many other former AFB buildings have also been leased by SCA to private commercial users.

This Phase I study focuses on two disposal sites that are currently located at SCA but were initially used by SCAFB. Due to the history of the sites with respect to the different periods of ownership/use, the Phase I study was conducted in two phases. During the initial effort major emphasis was placed on investigation of past operations and disposal practices of the Air Force at the former SCAFB during its period of operation from 1951 to 1970. The Installation Assessment for the two disposal sites was initiated in August 1986 with a records search and review and site reconnaissance of the two sites of concern and of other pertinent areas of the former SCAFB. Based on information from historical records, aerial photographs, physical site inspection, and personnel interviews with former SCAFB personnel, the history of two sites was developed and the sites were evaluated for contamination characteristics, potential migration pathways, and potential pollutant receptors.

The results of the Installation Assessment were initially presented in a draft version of the main section of this report. The draft report was reviewed by Oak Ridge National Laboratory, USAF and appropriate regulatory agencies. Subsequent to this review, Dames & Moore was requested to complete further investigations to determine the potential role of the Air National Guard (ANG) in the use of the two disposal sites.

Due to ANG presence at SCA since 1971, its role as SCA tenants, its known use of one of the sites of concern, and its location with respect to the two sites, the USAF considered it appropriate to investigate ANG's past waste generation, handling, and disposal activities at SCA, especially with respect to their potential use of either of the two sites of concern. As a result, in June 1987, the second phase of the study was conducted and an addendum to the main report was prepared following an on-base records search and investigation of ANG activities. The addendum report, which follows the main section of this document, supplements the initial findings presented in the main section of this report and presents greater detail relative to ANG activities. The scope of the addendum report is limited to ANG's role in the use of the two disposal sites although investigation encompassed the entire facility to collect pertinent information relating to these sites.

FINDINGS

Site 1, Runway Disposal Area, was used by SCAFB from the mid-1950s until 1970. The SCA, the 106th Aerospace Rescue and Recovery Group (ARRG) of the ANG, and other SCA lessees were authorized contributors to the Runway Disposal Area from 1971 to 1982. Also, unauthorized disposal has occurred at this site since 1970. Approximately one-third of this site is covered by concrete rubble from reconstruction of the airfield runways by SCAFB. The remaining 5.8 acres consist of random surface scattering of waste piles. Based on information collected during the 1986 investigation, waste burial is suspected within a small area in the northwest corner of the site. Despite efforts during the June 1987 investigations to collect additional confirmatory information concerning waste burial in the northwest corner, no further information was obtained. The majority of wastes disposed of at Site 1 were inert wastes associated with construction. Unauthorized disposal of other wastes, including potentially hazardous wastes in this area, after 1970, has resulted in potential contamination at Site 1.

Site 2, Canine Kennel Landfill, a 1-acre site, was used by SCAFB during deactivation activities for burial of inert wastes. Evidence indicates that this site was not later used by either SCA or ANG for waste disposal. However, PCB transformers and capacitors were discovered at this site and removed in 1984. Confirmation of PCB contamination in the near-surface soils has occurred at the site. The source of the PCB transformers found at the site is unknown.

It was concluded during the initial investigation that surface runoff is not a direct source of concern as a potential contaminant pathway at either of the two disposal sites because of hydrologic conditions in the vicinity of the sites. High permeability sandy soils allow for rapid percolation through the unsaturated zone and potential contamination of the surficial aquifer. The groundwater table is approximately 15 to 20 feet below each of the sites. Hydraulic conductivity of the surficial aquifer is very high and there is potential for contaminant migration to be correspondingly rapid. Groundwater flow direction is southeastward toward both the headwater area of Quantuck Creek and the Old Ice Pond of the Quogue Wildlife Refuge which is located 1,000 feet downgradient of the sites. Approximately 1,500 feet southwest, but not directly downgradient, of Site 1 are potable water supply wells for the Suffolk County Water Authority which may possibly be affected by contaminants migrating from the sites. The surficial aquifer supplies virtually 100 percent of all the potable water in the area either through municipal or private wells.

The Hazard Assessment Rating Methodology (HARM) was applied to the two sites of concern, and scores of 52 and 57 were calculated for Site 1 and Site 2, respectively. It is important to note that the rankings reflect the current condition of the sites and not the condition of the sites when the Air Force closed the base in 1970. Significant factors affecting the rankings included nearby critical environments and nearby use of the uppermost groundwater aquifer. Potential contaminants at Site 1 primarily include POLs, paint wastes, and solvents and at Site 2 include PCBs and heavy metals. The HARM rankings prepared during the initial study (and incorporated in the main section of this report) were reviewed subsequent to the June 1987 investigation. Addendum report findings did not impact the HARM scores previously determined.

CONCLUSIONS

The Phase I study concludes that, based on report findings, no hazardous wastes were disposed of at Site 1 or Site 2 during use of these sites by SCAFB.

Additionally, no records search or interview information collected indicates that either Site 1 or Site 2 was used by SCANG for disposal of hazardous wastes. However, during site visits, four apparently unopened 5-gallon cans of metal coating resins were observed at Site 1. The cans had military markings and carried a 1973 date. How they got to the site is unknown and they have subsequently been removed.

The potential for hazardous wastes to have been disposed of at Site 1 since July 1970 exists; the parties responsible for this disposal are unknown. PCB contamination at Site 2 has been confirmed. The parties responsible for disposal of the PCB transformers and capacitors are unknown.

RECOMMENDATIONS

Based on occurrences at Sites 1 and 2 after transfer of site property to Suffolk County, additional contamination investigations at both sites appear warranted to assess the potential threat to human health or to the environment. A study involving groundwater sampling and analysis is recommended at each site to confirm or disprove the existence of contamination and to quantify the extent of any problems that may exist. The necessity for conducting remedial measures or cleanup operations would then ultimately be determined by evaluation of the results of confirmation investigations.

REFERENCE NO. 5

Appendix 1.3-3
1 of 14

Dan Raviv Associates, Inc.
Consultants in ground water hydrology, water quality and landfill hydrology

PHASE I EVALUATION
GEOHYDROLOGIC/WATER QUALITY CONDITIONS
SUFFOLK COUNTY AIRPORT AND VICINITY
WESTHAMPTON, NEW YORK

Job No. 83C146

Prepared
for the

Environmental Protection Bureau
New York State Department of Law

Attention: Nancy Sterns, Esq.
Norman Spiegel, Esq.
Greg Shkuda, Ph.D.

October 25, 1983
Revised: April 1984

5 Central Avenue, West Orange, New Jersey 07052 (201) 325-0806

(2) Well or sample depth (when available); and

(3) Month sampled

Water quality data presented on Figure 6 ranges from non-detected concentrations to about 1,000,000 ppb. Many of the compounds were reported as present and were not quantified. Taking into account that the high concentrations may have been an analytical error, a contaminated ground water area south of the tank farm can nevertheless be delineated.

Number of Detected Compounds

A graphic representation of the most frequently detected organic compounds in ground water versus the type of compound found was constructed (Figure 7).

The reported detection for the monitoring wells were tabulated for all compounds detected in two or more samples and were placed on the graph. This graph represents the frequency of compounds detected in ground water samples regardless of their concentrations.

4.2 Geology

The geology of the region has been extensively studied, primarily because of the importance of ground water to Long Island. Glacial deposits, consisting of till and outwash sands and gravels of Pleistocene Age, mantle much of Long Island. In this area, they are found to a depth of about 100 feet below sea level and unconformably overlie the sediments of the Cretaceous Magothy Formation on an erosional surface. The Magothy Formation consists of silts, sands, gravels, and clays and is reported to be 800 to 1,200 feet thick in this area (Jacob, 1968; Anderson & Berkebile, 1976). The underlying Cretaceous sediments and bedrock are not considered here because they are found well below the depth of the fresh water aquifer and the contamination.

Descriptions of samples obtained during drilling for installation of monitoring wells in the vicinity of the Suffolk County Airport indicate that the glacial material is composed primarily of fine to coarse sand with some silt and gravel. Glacial material is often variable in lithology and depositional mode within relatively small areas. Local variations could affect ground water quality, in particular clay particles may adsorb organic compounds in percolating water. Variations in depositional mode, resulting in different bedding structures, could affect ground water flow paths. Detailed logs, continuous from the surface to the total depth of any monitoring well should be obtained whenever possible.

The constructed hydrogeologic profiles (Figures 4 and 5) display the depths of some of the wells and the lithologies encountered. Based on available information about the area, the lithology is described in the profiles as fine to coarse glacial sands and gravels.

4.3 Geohydrology

Geohydrologic conditions of the region are known based on numerous investigations (Nemickas, 1982; Berkebile, 1975; Holzmacher, McLendon and Murrel, 1968). Underneath Long Island fresh ground water occurs in a lenticular shaped deposit overlying salt water. The deposit is thickest toward the center of the island, thinning rapidly along the coasts. The fresh ground water near the Suffolk County Airport is usually under phreatic water table conditions. As a result, the elevation of the water table generally parallels the topography. The principal aquifers in the area are the upper Glacial aquifer and the deeper Magothy aquifer. These aquifers have hydraulic properties which are similar. For the purpose of this study, we are mainly concerned with the upper Glacial aquifer. The transmissivity of the upper Glacial aquifer ranges from about 45,000 to 75,000 gallons per day per foot (gpd/ft) (Nemickas, 1982). The horizontal hydraulic conductivity is on the average about 350 ft/day and the specific yield ranges from 0.20 to 0.30. The saturated thickness of the aquifer is about 50 feet.

The water level contour map, constructed from the March 1982 measurements in the NYDOT wells indicate that the water table in the study area generally slopes to the south and is affected by streams to the SE and SW (Figure 3). We have assumed that these measurements indicate "static" conditions because: (a) most private wells in the area have not been in use since 1977; (b) we do not have pumping records from the SCWA supply wells along Meetinghouse Road to indicate variations in the pumping rate from 3,000 gpm; and (c) water level measurements have not been obtained from the monitoring wells on a consistent basis to indicate water level changes with time. Based on the water table elevations from Figure 3, the hydraulic gradient is on the order of 1.5×10^{-3} ft/ft. The velocity of ground water flow in the glacial aquifer is computed from on Darcy's Law:

$$v = \frac{Ti}{dn} \tag{1}$$

where: v = acutal velocity of ground water, ft/day

T = transmissivity - ranges from 6,000 to 10,000 ft^2/day

i = hydraulic gradient, ft/ft

d = saturated thickness of the aquifer, feet

n = porosity, assumed equal to specific yield

The computed groundwater velocity is therefore about 0.6 to 1.5 ft/day.

The depth to water in the vicinity of the tank farm is on the order of 30-36 feet. The NYDOT elevations are tied into an assumed elevation which was adjusted for the construction of the contour map (Figure 3). Most of the elevations of the few other wells in which water levels have been measured are not known. Water levels in private wells usually cannot be measured due to the inaccessibility of the wells. Without water level measurements tied into an elevation, and taken at regular intervals over a period of time, it is difficult to correlate water table fluctuations with precipitation, stream flow, artificial recharge, or variations in pumpage. Since many of the wells are only installed into the top of the water table, relatively large variations in the water table elevation may not be measurable. As stated earlier, we have assumed that the NYDOT well measurements reflect current conditions. We have also assumed that the water table elevation does not fluctuate more than an inch or two in response to factors mentioned above and its configuration remains relatively constant.

The available depths to water were indicated on the hydrogeologic profiles (Figures 4 and 5). Some surface elevations, which were not available from the files, were approximated from the contours on the regional topographic sheet. These profiles display the general topography with relationship to the depth to water. In addition, considering the fact that the aquifer extends to a depth between 50 and 100 feet below land surface, it is apparent from the hydrogeologic profiles that ground water sampling is not representative of the total aquifer depth. In most cases, only the top few feet of the aquifer were sampled.

4.4 Surface Water and Recharge

The area south of the airport is bounded by two streams (Aspatuck and Quantuck Creeks) that join to form Quantuck Bay to the south. The Quogue Wildlife Refuge ponds and streams, which are on the east side of the airport, drain south into Quantuck Creek. Aspatuck Creek also flows south on the western side of Peters Lane. Although no culvert is present under the railroad and road to the north of Aspatuck Creek, it was noted through our field observation that this area (which is adjacent to the tank farm) slopes toward the creek.

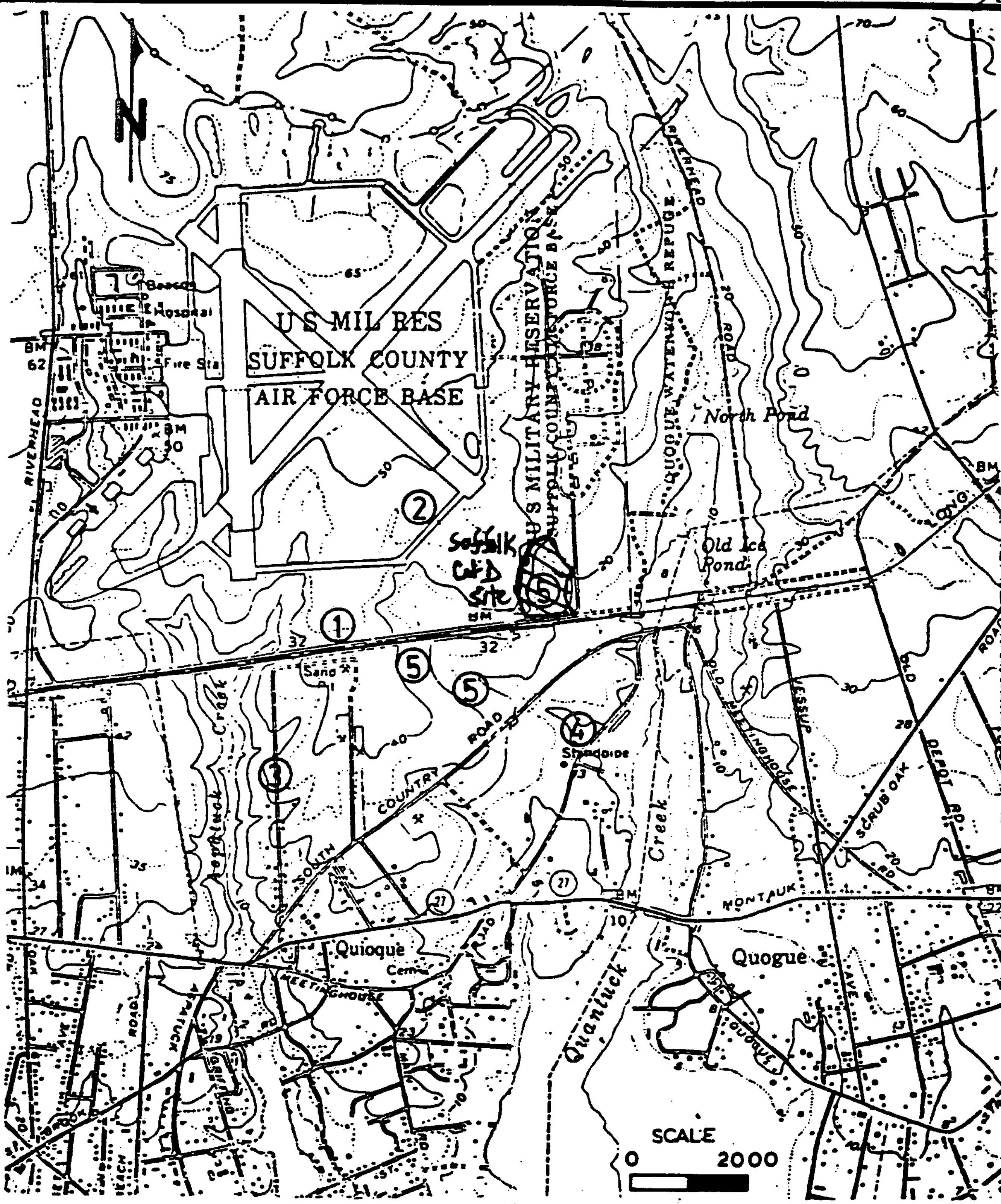
The average precipitation for the area is 43 inches per year, based on the 30-year precipitation records of the National Weather Service (Nemickas, 1982). The amount of overland runoff from precipitation is relatively low because the soil and subsurface are highly permeable. Much of the precipitation is infiltrated through the unsaturated zone to the water table. Therefore, the surface water consists mainly of ground water discharge.

The division between infiltration and runoff of a contaminant "slug" such as the 10,000 gallons of fuel spilled is dependent upon several factors including: precipitation amount and duration, land surface slope and the characteristics of the unsaturated material above the water table. It is generally assumed that the soils and glacial sands allow for rapid infiltration and recharge. However, based on local drainage, a spill of such magnitude could in part reach surface water bodies.

4.5 Water Quality

4.5.1 Ground Water

The water quality of the glacial aquifer in the area has generally been found to be potable in most parts. Iron, chloride and nitrate often occur in concentrations higher than drinking water standards of background concentrations. Concentrations of iron in the majority of water samples (March 1983) taken from the wells installed adjacent to the Quogue Wildlife Refuge were found to be above the New York State limits for drinking water (0.3 mg/1). The remaining parameters tested were within the drinking water standards. No volatile organics were detected in the surface water of the Wildlife Refuge. Other studies of the glacial aquifer ground water have found the water to be of good quality (Nemickas and Koszalka, 1982).



APPROXIMATE
LOCATION OF:

1. TANK FARM
2. FIRE PIT
3. PETERS LANE
4. SCWA WELL FIELD
5. LANDFILL- C+D site

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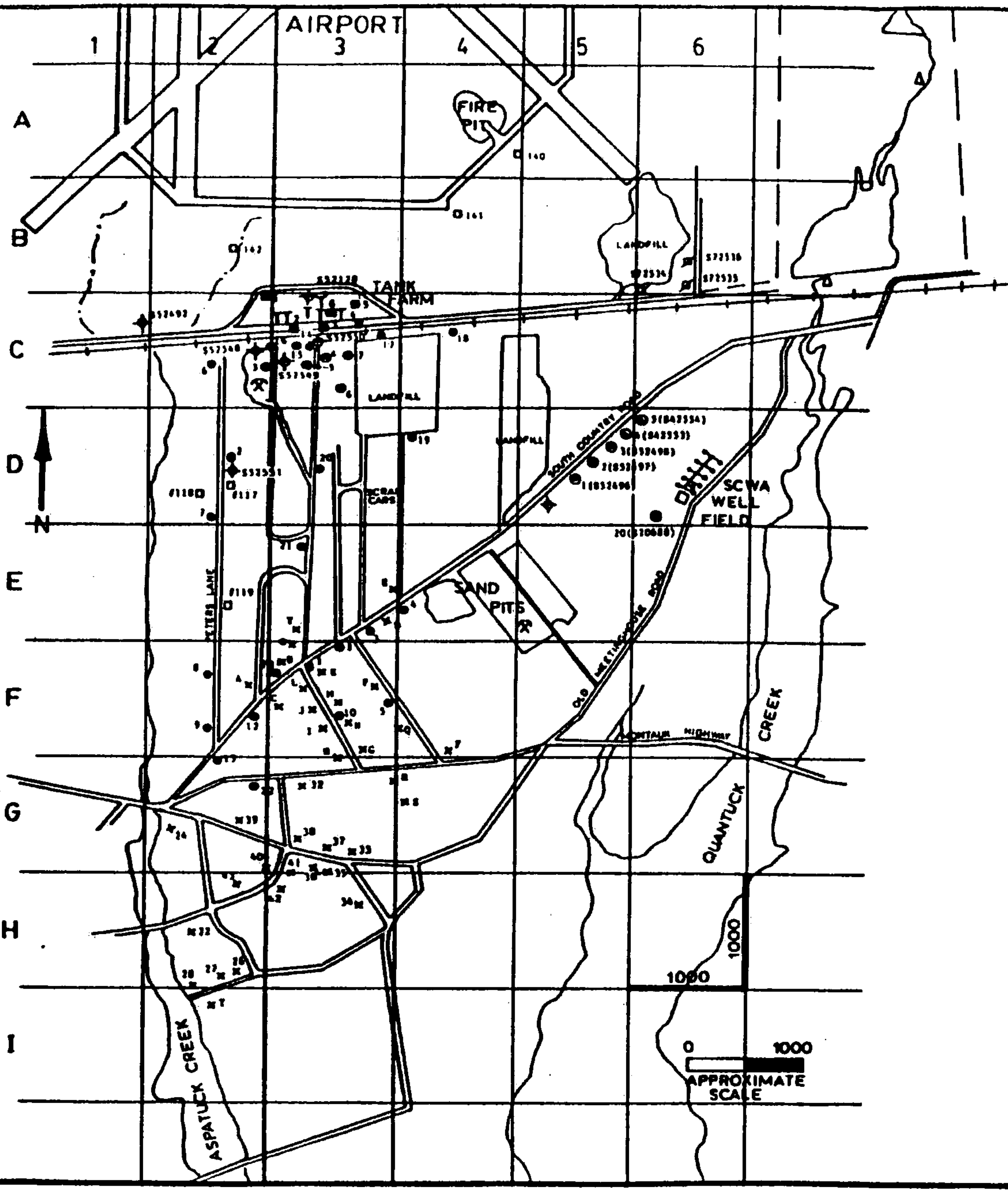
SUFFOLK COUNTY AIRPORT
PROJECT LOCATION MAP

NEW YORK DEPARTMENT OF LAW
ENVIRONMENTAL PROTECTION BUREAU

Prepared By JMH	Date AUG./SEPT. 1983
Job No. 83C146	Figure No. 1



WELL DESIGNATION AND DATA

SYMBOL	WELL NO.	DATE DRILLED	WELL DEPTH (ft.)	COMMENTS
■	NEW YORK AIR GUARD			
	1	MAY 1982	30	
	2	MAY 1982	20	
	3	MAY 1982	30	
	4	MAY 1982	30	
	5	MAY 1982	30	
	6	MAY 1982	20	
●	NEW YORK DEPARTMENT OF TRANSPORTATION (DOT)			
	1 - 22	MARCH 1982	-	SCREENED IN THE TOP OF THE WATER TABLE
◉	SUFFOLK COUNTY DEPARTMENT OF HEALTH (SCDH)			
	2	DECEMBER 1981	63	REMOVED
	3	DECEMBER 1981	62	
	4	DECEMBER 1981	37	
	5	DECEMBER 1981	63	REMOVED
	6	DECEMBER 1981	60	
	7	DECEMBER 1981	40	
□	SCDH INVESTIGATION (HARDELL)			
	117	JUNE 1977	80	
	118	JUNE 1977	80	
	119	JUNE 1977	80	
	140	JULY 1977	80	
	141	JULY 1977	85	
	142	JULY 1977	80	
⊠	S72534	March 1982	42	
	S72535	March 1982	42	
	S72536	March 1982	32	
⌖	MONITORING WELLS OF SCDH SYSTEM			
	S52128	JUNE 1974	37	
	S52092	JULY 1974	0	
	S52548	AUGUST 1974	40	
	S52549	AUGUST 1974	43	
	S52550	AUGUST 1974	40	
	S52551	AUGUST 1974	32	
⊖	SUFFOLK COUNTY WATER AUTHORITY (SCWA) MONITORING WELLS			
	1(S52496)	AUGUST 1974	26	
	2(S52497)	AUGUST 1974	22	
	3(S52498)	AUGUST 1974	23	
	4(S52553)	AUGUST 1974	18	
	5(S52554)	AUGUST 1974	19	
	20(S20600)	JANUARY 1962	70	
⌗	SCWA SUPPLY WELL FIELD SUCTION SYSTEM	FROM 1903 TO 1963	FROM 46 TO 50	
X	PRIVATE, RESIDENTIAL			
	A	-	-	
	B	-	-	
	C	-	70	
	D	-	-	
	E	-	90	
	F	-	-	
	G	-	34	
	H	-	130	
	I	-	70	
	J	-	48	
	K	-	70	
	L	-	34	
	M	-	-	
	N	-	33	
	O	-	25	
	P	-	-	
	Q	-	-	
	R	-	30	
	S	-	-	
	T	-	-	
	U	-	-	
	24	-	-	
	25	-	-	
	26	-	30	ESTIMATED DEPTH
	27	-	30	
	28	-	-	
	32	-	-	
	33	-	-	
	34	-	21	ESTIMATED DEPTH
	35	-	-	
	36	-	-	
	37	-	94	ESTIMATED DEPTH
	38	-	-	
	39	-	-	
	40	-	-	
	41	-	25	ESTIMATED DEPTH
	42	-	32	ESTIMATED DEPTH
	43	-	30	ESTIMATED DEPTH
	46	-	-	

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WELL LOCATION, OWNERSHIP, DESIGNATION AND INFORMATION

SUFFOLK COUNTY AIRPORT - NYSDOL

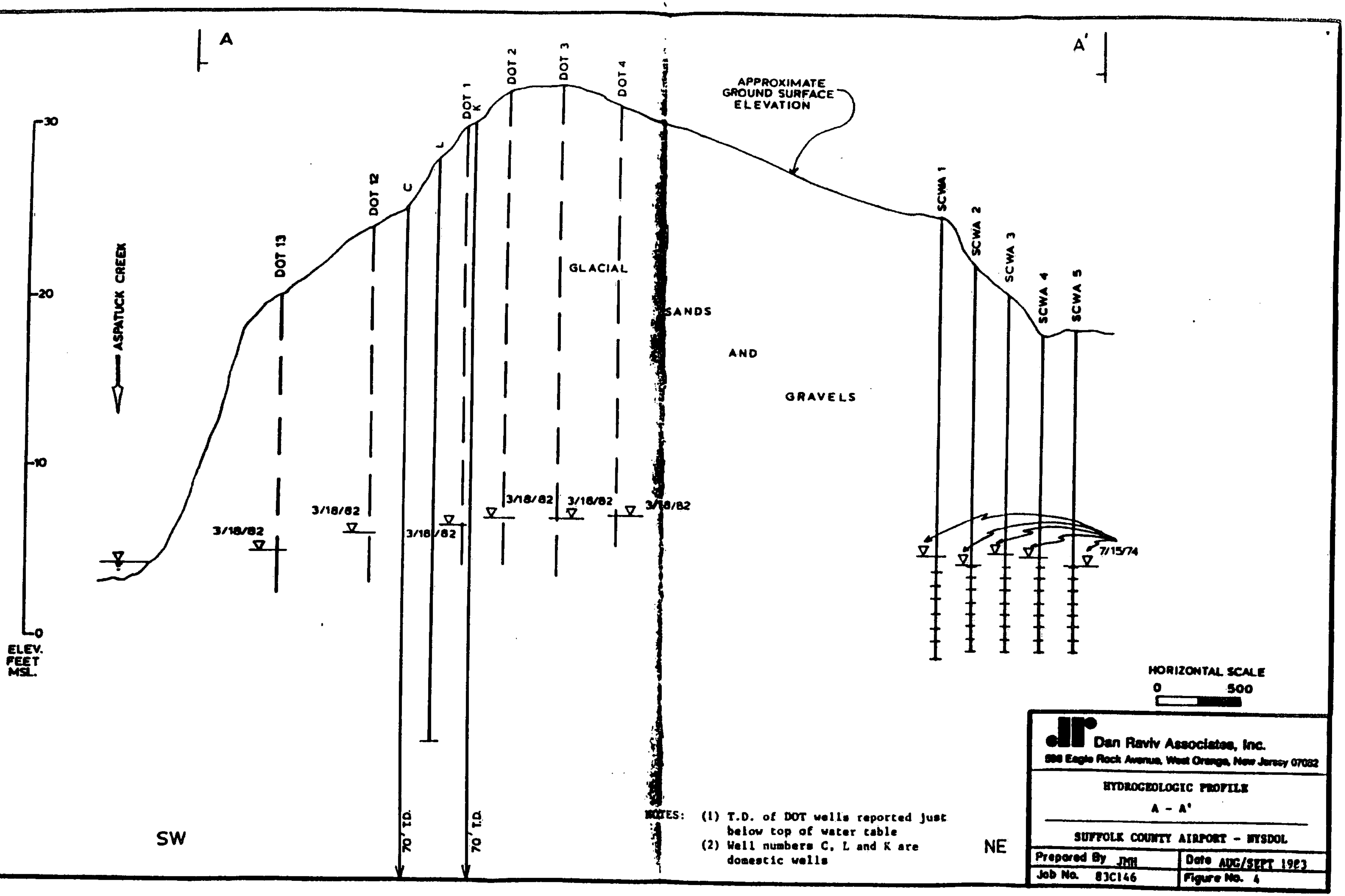
Prepared By JMH	Date AUG/SEPT 1983
Job No. 83C146	Figure No. 2

10614

Figure No. 3 cont'd

EXPLANATION

SYMBOL	DESCRIPTION
●	NEW YORK DEPARTMENT OF TRANSPORTATION WELL Sampled 3/82
×	PRIVATE, RESIDENTIAL WELL Sampled 2-3/82
⊗	SUFFOLK COUNTY DEPARTMENT OF HEALTH (SCDH) WELL Sampled 12/81 & 3/82
⊙	SUFFOLK COUNTY WATER AUTHORITY(SCWA) MONITORING WELL Sampled 12/81 & 1/82
	SCWA PUBLIC SUPPLY WELLS
■	NEW YORK AIR GUARD WELL Sampled 5/82
△	QUOGUE WILDLIFE REFUGE WELL OR SURFACE WATER SAMPLE POINT Sampled 3/83
⌖	"S" MONITORING WELL OF SCDH SYSTEM
□	SCDH INVESTIGATION WELL (no sample data since 1977)



NOTES: (1) T.D. of DOT wells reported just below top of water table
(2) Well numbers C, L and K are domestic wells

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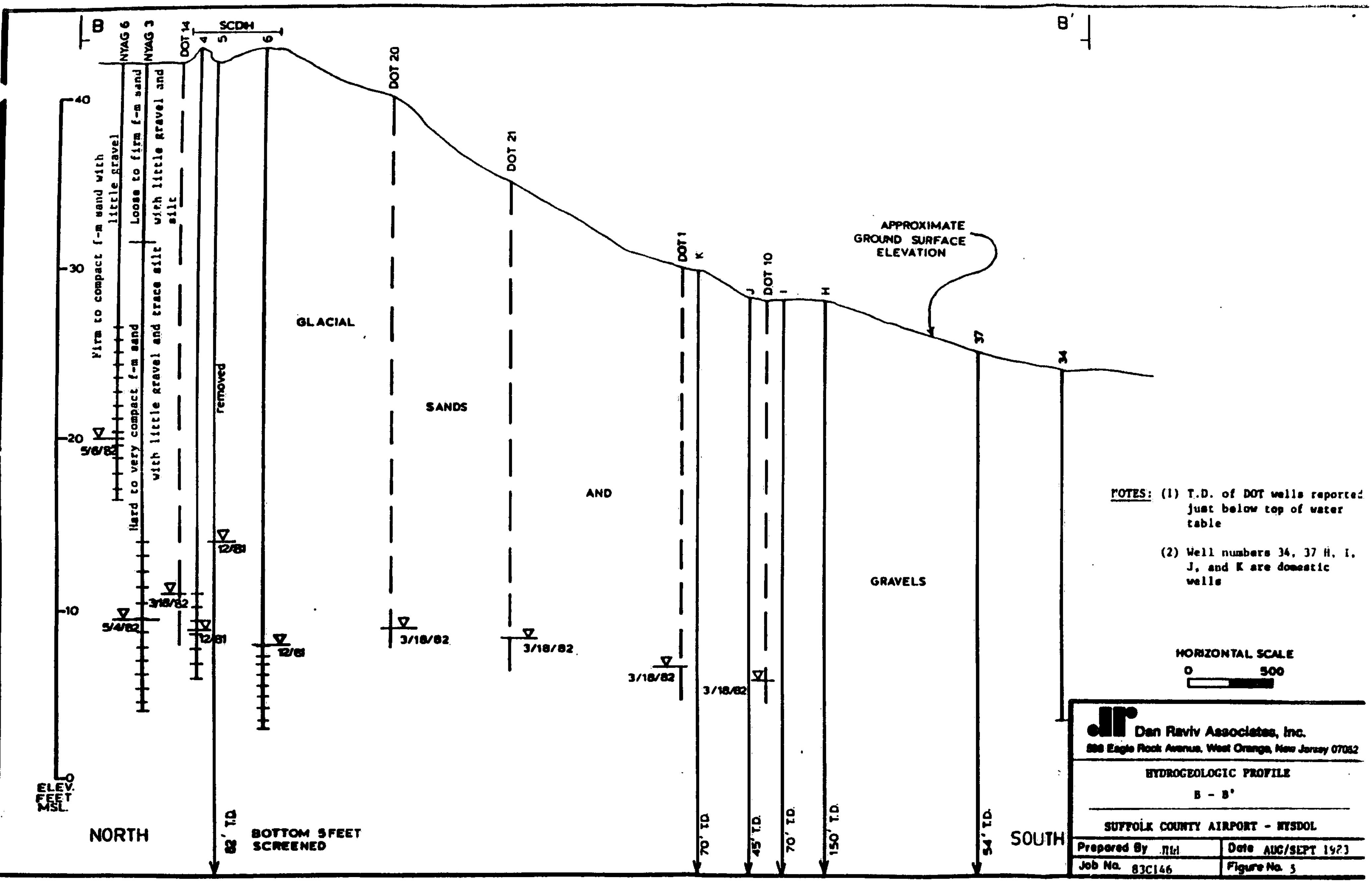
HYDROGEOLOGIC PROFILE

A - A'

SUFFOLK COUNTY AIRPORT - NYSDOL

Prepared By JMH	Date AUG/SEPT 1983
Job No. 83C146	Figure No. 4


B
B'
SCDH
NYAG 6
NYAG 3
DOT 14
4
5
6
DOT 20
DOT 21
DOT 1
K
DOT 10
J
I
H
37
34
40
30
20
10
0
ELEV. FEET MSL.
Firm to compact f-m sand with little gravel
Loose to firm f-m sand with little gravel and silt
Hard to very compact f-m sand with little gravel and trace silt
removed
5/6/82
5/4/82
3/18/82
12/81
GLACIAL
SANDS
AND
GRAVELS
APPROXIMATE GROUND SURFACE ELEVATION
NORTH
SOUTH
82' T.D.
BOTTOM 5FEET SCREENED
70' T.D.
45' T.D.
70' T.D.
150' T.D.
54' T.D.
NOTES: (1) T.D. of DOT wells reported just below top of water table
(2) Well numbers 34, 37 H, I, J, and K are domestic wells
HORIZONTAL SCALE
0
500
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HYDROGEOLOGIC PROFILE
B - B'
SUFFOLK COUNTY AIRPORT - NYSDOL
Prepared By
Date AUG/SEPT 1983
Job No. 83C146
Figure No. 5

14 of 14

REFERENCE NO. 6

LOAN COPY

STATE OF NEW YORK
DEPARTMENT OF CONSERVATION
WATER RESOURCES COMMISSION

Ground-Water Levels and Their Relationship to Ground-Water Problems in Suffolk County, Long Island, New York

Prepared by the

U. S. GEOLOGICAL SURVEY

in cooperation with the

NEW YORK STATE WATER RESOURCES COMMISSION

SUFFOLK COUNTY BOARD OF SUPERVISORS

and the

SUFFOLK COUNTY WATER AUTHORITY

BULLETIN GW-4[illegible]

ALBANY, N. Y.

1961

STATE OF NEW YORK
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WATER RESOURCES COMMISSION

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Ralph C. Heath..............................Acting District Geologist

CONTENTS

ILLUSTRATIONS

TABLES

Ground-water levels and their relationship to ground-water problems in Suffolk County, Long Island, N. Y.

By

J. F. Hoffman
Engineer, U. S. Geological Survey
and
E. R. Lubke
Geologist, U. S. Geological Survey

ABSTRACT

Suffolk County occupies the eastern two-thirds of Long Island, N. Y. and its economic livelihood, derived essentially from industry and agriculture, is vitally dependent upon its vast natural reservoir of ground water of good quality.

Natural replenishment of ground water is provided by precipitation which averages about 43 inches per year. Under present conditions of infiltration, ground-water recharge is about 350 billion gallons during the average year. Natural discharge of ground water takes place through streamflow, underflow, transpiration and evaporation. Land development alters the natural recharge-discharge pattern in varying degrees by the installation of sewers and the establishment of extensive areas of paved and roofed surfaces. Increased water usage, which accompanies this development, also changes this pattern. The influence of these cultural changes on ground-water storage is evident through the continuing measurement of ground-water levels.

Presented herein (table 2), are more than 4,000 measurements for 65 water-table wells measured as part of this monitoring program. The location of all wells that were previously or are currently measured under the program are shown on plates 1 and 2 together with the associated aquifers and the availability of the measurements. Also tabulated, with report titles and report numbers for the years concerned (table 3), are the wells for which water levels have been published in the annual water-level reports that are issued periodically by the U. S. Geological Survey.

Water-level measurements are useful in other respects - especially in the construction field. Water-level data have been helpful in solving problems related to foundations, cesspools, well construction, and land drainage. In this report, a discussion is given of the relationship between water levels and these problems.

Filling in gaps in water-level data or estimating data for sites remote from observation wells is possible by interpolation of water-level measurements of wells in the vicinity. Correlation of the short-term water-level record of one well with the long-term water-level record of another constitutes a useful tool for extending water-level data. Projecting observed water-level information into the future, in order to estimate infrequent water-level extremes, is a useful application of water-level data and can be accomplished within broad limits by a logarithmic-probability plot of water levels for the well in question versus cumulative frequency of occurrence. This method, however, has certain limitations and must be used with caution.

INTRODUCTION

Suffolk County, one of the most rapidly growing counties in the United States, occupies the eastern two-thirds of Long Island (fig. 1). Here industry and agriculture exist side by side bringing prosperity to the entire population. One reason for the continued success of each activity is the abundant supply of water of good quality.

In 1956, nearly 20 billion gallons of ground water were withdrawn from Suffolk County's underground reservoir to supply the needs of industry, agriculture, public and private supply. As this reservoir is the principal source of water available at present, adequate protection of the subsurface reserves is vital to the economy and public welfare of Suffolk County.

The need for basic appraisal of the ground-water resources of Suffolk County as well as for determining any contamination or depletion of the reserves that might be taking place was recognized by State and County officials in the early thirties. As a result, since 1932, the New York State Water Resources Commission (formerly Water Power and Control Commission), the Suffolk County Board of Supervisors and, later, the Suffolk County Water Authority, have maintained agreements with the U. S. Geological Survey for a continuing countywide ground-water investigation.

A major threat to Suffolk County's water reserves is contamination from the salt-water bodies that bound the county on three sides; therefore, part of the continuing investigative program is periodic sampling of well water for evidence of such contamination. Recent evaluation of the results of this program (Hoffman and Spiegel, 1957) indicates that up through 1953 only localized sea-water contamination had taken place. The wells affected are near surface-water bodies containing salty water and contamination has resulted from pumping the individual well rather than from an extensive landward movement of salty water.

Periodic measurement of water levels at a number of observation wells throughout Suffolk County is another part of the continuing investigative program. Properly interpreted, these measurements help to determine basic water-level conditions and to delineate areas where overdevelopment of the ground-water reserves may lead to sea-water encroachment and other problems. Perhaps the chief advantage of this procedure is that impending contamination of the ground water can be detected without the landward movement of salt water.

The chief purpose of this report is to make available more than 4,000 previously unpublished water-level measurements for 65 selected Suffolk County shallow wells (tables 1 and 2) and to give the location of all wells measured for monitoring and other purposes (plates 1 and 2). Also tabulated are the Water-Supply Papers of the Geological Survey which contain water-level measurements for Suffolk County (table 3). In the past, these data were published annually by the Survey. Under the present schedule, the Survey will publish the levels for 1956 and 1957 in one volume and thereafter each volume will contain records covering a 5-year period. Additional uses for water-level data are described, and some

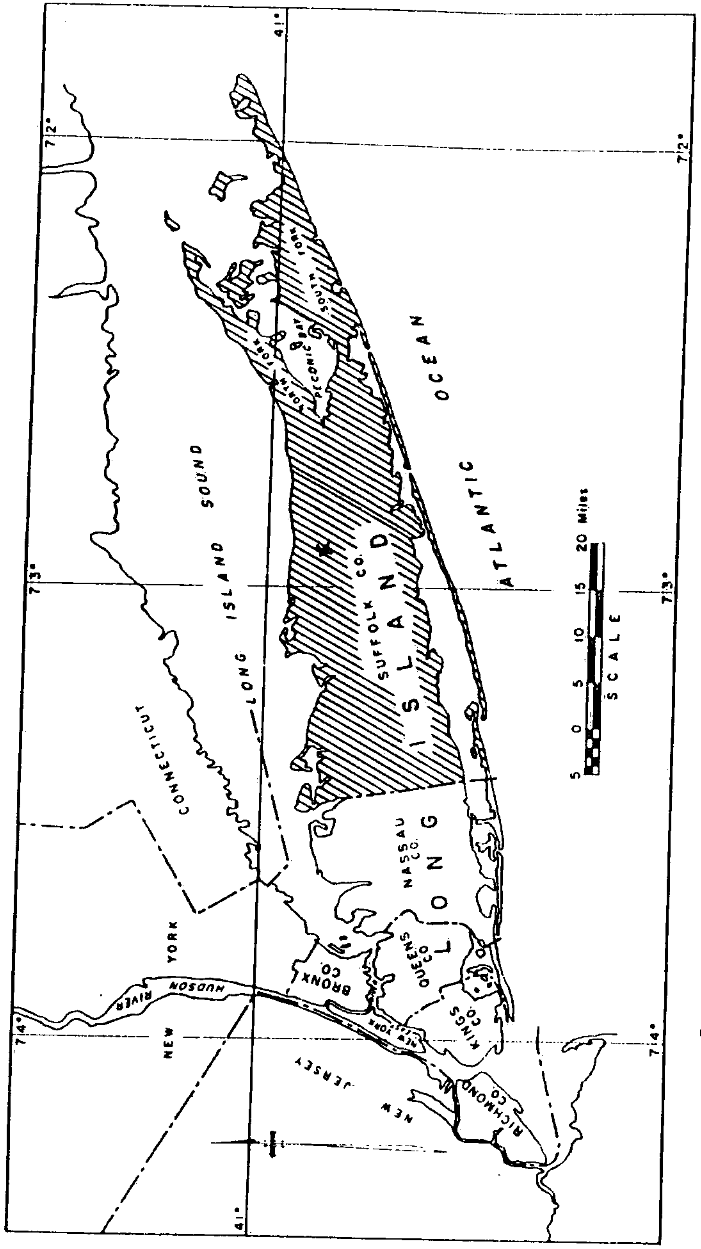

Figure 1.--Index map of Long Island, N.Y. showing location of Suffolk County.

methods are presented for estimating water levels in areas where there are no observation wells or where approximate long-term maximum and minimum values of water levels are desired.

Water-level measurements listed in table 2 were, for the most part, made by the U. S. Geological Survey. Measurements during the early 1900's and some during the early 1930's (table 3) were made by the New York City Department of Water Supply, Gas and Electricity when Long Island sources were being considered for extensive water-supply development.

GROUND-WATER OCCURRENCE AND MOVEMENT

Ground water fills the pore spaces of the unconsolidated clay, sand, and gravel that underlie Suffolk County. Three water-bearing formations (aquifers) have been recognized. Composed mainly of various types of sand and gravel, these formations in sequence upward from bedrock are: the Lloyd sand member of the Raritan formation of Late Cretaceous age, the Magothy(?) formation of Late Cretaceous age, and the upper Pleistocene or glacial deposits.

The water table of Suffolk County, the upper limit of the entire thickness of saturated material, ranges in altitude from about 70 feet above sea level in the inland, central portion of Suffolk County to sea level near the shores. Below this surface is stored many billions of gallons of ground water. Shown in figure 2 is a water-table map for a portion of south-central Suffolk County as of the end of December 1950 (after Lusczynski and Johnson, 1951).

In some parts of Suffolk County, locally continuous layers of low-permeability material lie above the water table. These areas are located mostly in the northern part of the County extending to Orient Point, and also in the South Fork. Percolation of recharge in these areas is temporarily retarded in its downward path and water, termed perched water, is stored above these layers. Storage in perched-water bodies appears to respond to short-term fluctuations in precipitation more markedly than storage in the main ground-water reservoir. During long periods of deficient precipitation the smaller and even some of the more extensive of these water bodies may be dissipated completely. As water levels in wells tapping these perched bodies do not necessarily reflect changes in storage in the recognized main ground-water reservoir, no attempt has been made to measure these levels in a continuing program.

Natural replenishment to Suffolk County's ground-water reservoir is derived solely from precipitation, which averages about 43 inches per year. Only part of the precipitation reaches the water-bearing formations, for sizeable amounts are lost through evaporation and transpiration before becoming ground water. Losses through overland runoff to streams in undeveloped areas are small, owing mainly to the excellent soil porosity. As a result of these factors and an estimated 50 percent recharge of precipitation, about 350 billion gallons of water replenish the ground-water reservoir during an average year.

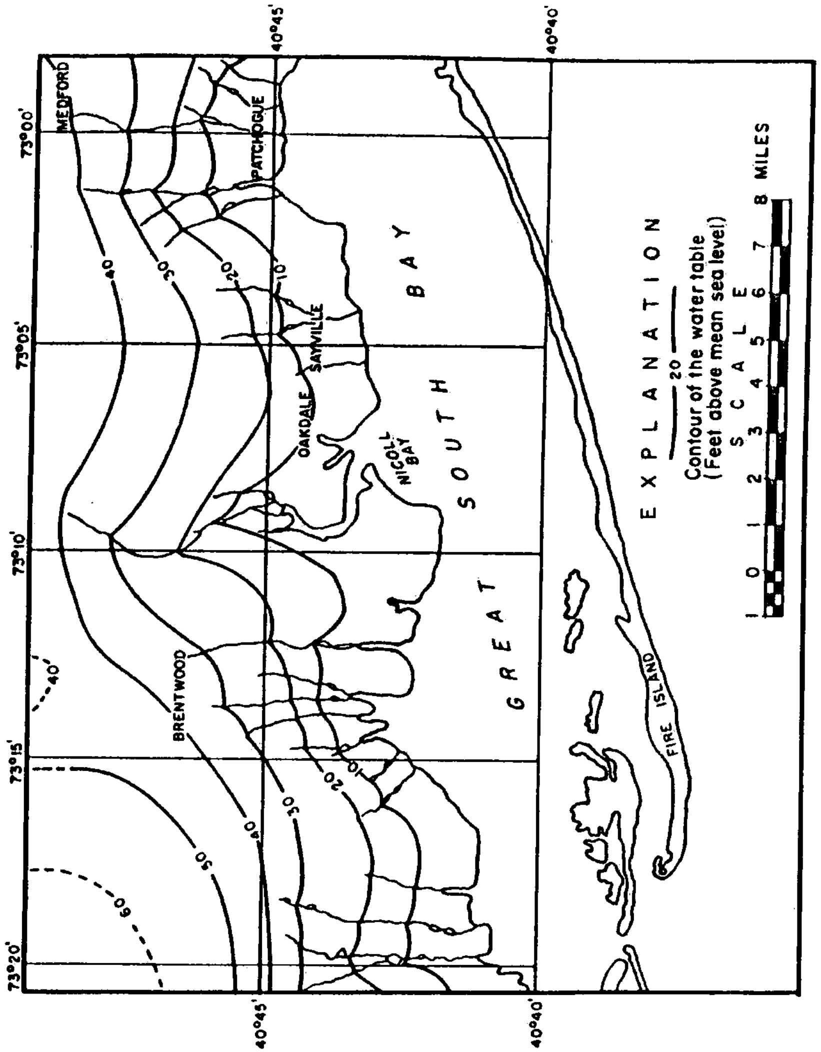

Figure 2.--Map of the water table in the south-central section of Suffolk County, Long Island, N.Y. at the end of December 1950.

Natural discharge from Suffolk County's ground-water reservoir takes place mainly through the seaward movement of streamflow and ground-water underflow. Streamflow is largely ground-water outflow through channels that intersect the water table. The annual volume of stream discharge averages about one-quarter of the average ground-water recharge (350 billion gallons) and amounts to more than 80 billion gallons. This quantity is about 4 times the ground water pumped for all purposes in 1956. An unknown, but probably greater, quantity of ground water moving through the subsurface sand, gravel, and clay, is discharged each year directly into the ocean or into streams below points of discharge measurement. A third water loss, also unknown in magnitude but possibly sizeable in amount, occurs through evaporation from surface-water bodies such as streams and ponds, and evaporation and transpiration from the marshy and low-lying areas that fringe the shoreline of Suffolk County.

Ground-water development can change the natural pattern of ground-water occurrence and movement. Pumping a well removes the ground water stored in the vicinity of the well and forms a local depression in the surrounding water table. This depression, because of its shape, is termed the cone of depression. Expansion of this cone takes place until ground-water recharge is increased or discharge is decreased an amount equal to that which is being pumped. Replenishing water can either improve or impair the quality of the stored ground water depending upon the quality of the source. Extreme quality impairment, such as that caused by serious sea-water encroachment, might require complete cessation of ground-water withdrawals.

Intensive land development also helps to unbalance the water budget. Interception and evaporation of precipitation from the increased roofed and paved areas and more efficient discharge of storm runoff to sewers dissipates water that otherwise would have seeped into the soil.

Variations in either recharge, discharge, or both results in changes in the amount of ground water in storage at any one time. These changes are reflected in changes in the position of the water table and are best determined by water-level measurements in representative observation wells.

Potential Ground-water Problems and Applications of the Water-level Data

At present, the chief ground-water problem in Suffolk County is localized sea-water contamination, but with increasing development of the ground-water reservoir, additional problems may become important. These are more fully described elsewhere (Hoffman, 1956). The following discussion considers: (1) more extensive sea-water contamination of the ground-water reservoir, (2) permanent depletion of ground-water storage, especially if Suffolk County should be extensively sewered, and (3) the application of water-level data to these potential problems.

Shown in figure 3 is a simplified version of how sea-water encroachment takes place. Here sustained pumping has depressed the ground-water levels below sea level. The cone of depression has expanded to the shoreline, and has caused salt water from the adjacent embayments and from the underlying sand and gravel to move toward the pumped well. First contaminated would be the water from the wells screened nearest the fresh water-salt water boundary. Continued pumping would cause a migration of this contamination further inland. In Suffolk County, stratification of the water-bearing beds, the presence of extensive layers of protective clays, and the pattern of ground-water movement modifies this theoretical picture.

Early detection of sea-water encroachment enables the application of measures to prevent further contamination. As previously indicated, one method of detection utilizes the large difference in the chloride content of sea water (high chloride) and fresh ground water (low chloride). The second method, previously mentioned, utilizes periodic measurement of water levels in observation wells. These measurements help to detect water-level trends that would favor ultimately the landward movement of sea water. For instance, measurements of the water levels in the observation wells shown in figure 3, when adjusted for precipitation, would show an overall downward trend from the start of pumping. Superimposed on this trend might be fluctuations owing to variations in artificial recharge and pumping, and in some cases, natural phenomena such as tides, barometric pressure, and evapotranspiration.

Permanent depletion of ground-water storage in Suffolk County may take place in future years owing to extensive sewering. The only sewers in Suffolk County at the present time are the small systems of the nearshore villages of Greenport, Huntington, Ocean Beach, Patchogue, Port Jefferson, and Riverhead; so, probably 80 percent of the water pumped from public, private and industrial wells is returned to the ground. If the area served by sewers expands, and if the storm water is discharged directly into the ocean, replenishment previously obtained from sanitary wastes and storm water will be reduced considerably.

On the other hand, withdrawals from the ground-water reservoir will probably increase in the future and the increased net draft will cause a decrease in ground-water storage and a decline of the water table. As in the case of sea-water contamination, water-level measurements will record the change in storage.

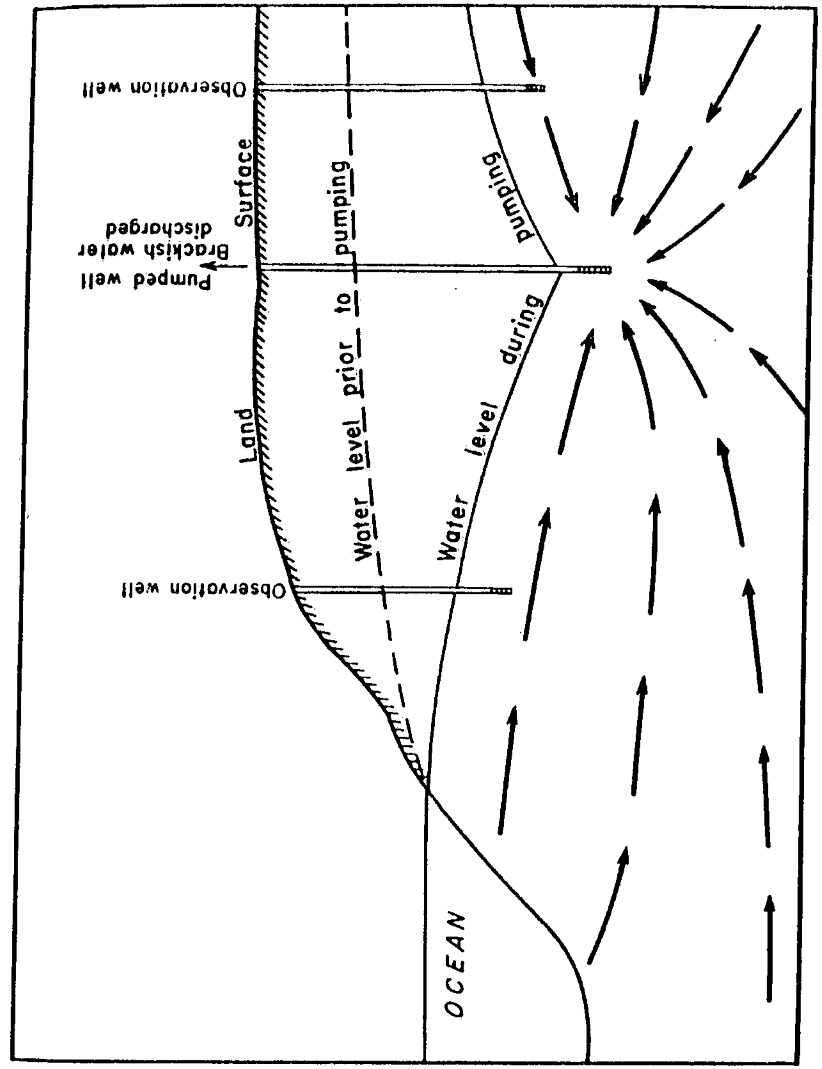

Figure 3.--Sea-water contamination of fresh water-bearing beds resulting from pumping a nearshore well.

Although the principal uses of water-level measurements in Suffolk County are for the evaluation of the basic ground-water situation and the detection of overdevelopment and sea-water contamination of the ground-water reservoir, water-level measurements are useful for a number of other purposes. Some of these uses are described in the following section of this report.

Additional Uses of Water-level Measurements

Besides the primary purpose of determining the status of ground-water storage and changes in this storage, water levels are useful in other respects - especially in the construction field. Some of these uses, as indicated by information requested from the U. S. Geological Survey, include the determination of depths of wells and cesspools, the diffusion of spent cooling water, and the design of foundations and land-drainage systems.

In some cases, satisfactory application of water-level data requires that the altitude of the land surface at the site be known. If exact altitudes are not available from the land survey, estimated altitudes are obtainable from U. S. Geological Survey topographic maps, available at nominal cost from the U. S. Geological Survey, Washington 25, D. C. Where greater accuracy is required, local surveyors, town engineers, state and county highway departments, or other agencies or individuals may have the desired information in their files. The depth to water beneath a site is the difference between the altitude of land surface and of the water table. Ideally, to determine the fluctuation of the water table beneath a site, the water level in a test hole or a well point at the site, should be measured periodically. Practically, it is assumed that the water table at the site undergoes a fluctuation pattern resembling that of the water level in a nearby observation well. When a test hole is not available or an observation well does not exist near the site, it may be possible to obtain a usable, but a less accurate, water-level altitude by interpolation of the water-level altitudes in two or more distant wells. This procedure is described more fully in the subsequent section entitled "Extending water-level data". Nearby pumping for water supply or dewatering purposes; ocean tides; tidal bores traveling up stream channels; changes in the flow of adjacent streams, especially if regulation is present; and the artificial recharge of cooling water and of storm or sanitary sewage are factors that influence such correlation.

Cost estimates and other needs often make it desirable to determine the minimum depth of a contemplated well. This very minimum depth possibly would be the depth to water beneath the site plus an allowance for the estimated drawdown due to pumping, recesssion of the water table due to diminished replenishment, and interference from nearby pumped wells. However, a number of other factors must be considered for the successful completion of a well, such as the rate at which the well is to be pumped, the hydraulic characteristics of the water-bearing material, the depth to a suitable water-yielding zone, and the proximity of sea water. Sometimes it is not possible to predetermine all of the factors and as a result,

conditions encountered during drilling may necessitate screening the well at a depth that is many feet below the previously estimated minimum depth.

Some sanitary and building codes, designated to minimize ground-water contamination, require that cesspool bottoms be located at least two feet above the highest recorded stage of the water table. The corresponding depth to water at site minus the prescribed distance of cesspool bottom above the water table gives the allowable cesspool depth under such requirements. Where only short-term records are available, the highest water level on record may be below the long-term maximum and at some future time a higher stage might result in cesspool problems.

Recommendations of the New York State Water Resources Commission, intended to minimize the effects of recirculation of warmed water, suggest that wells diffusing spent cooling water be placed at least 100 feet downgradient from the supply wells. In order to determine this direction, water levels in a number of local wells should be appraised. The most convenient method of appraisal is to construct a water-table contour map, such as that shown in figure 2, by plotting the well locations annotated with concurrent water-level altitudes. Lines, called contour lines, are then drawn through selected or interpolated points having the same water-level altitudes. Ground-water movement takes place in a direction at right angles to these contour lines.

Building foundations constructed during below-normal stages of the water table, in areas where the water table is relatively close to land surface, may be subject to seepage and stability problems when the water table rises. Cognizance of this possibility and examination of the long-term range in water-level fluctuations in nearby shallow wells at the time of foundation design can do much to avoid costly remedial measures. Foundation problems involving perched water may require a different solution. Consequently, it is important to distinguish between the two cases. Comparison of the altitude of the water level of the unidentified ground-water body with that of the water table underlying the site, estimated from a water-table contour map, or that of the water level in a nearby water-table observation well, may enable such identification. In some cases, it may be necessary to drive a well point, measuring the depth to water frequently as the well is driven, in order to determine whether or not an unsaturated condition exists beneath the unknown water body. If an unsaturated zone does exist at a greater depth, the water in the well will drain into the unsaturated zone and a water-level measurement will not be possible.

Land-drainage problems, similar to foundation problems, require determination of the source of the boggy condition prior to the use of remedial measures. Again, comparison of the water level at site with water levels in nearby water-table observation wells will assist in determining whether or not the water surface is related to the main ground-water body or to a perched water body. Problems arising from fluctuations of the main water table might necessitate, as one remedial measure, lowering the water table locally through the use of well points, trenching, stream dredging, etc.

Perched water problems, on the other hand, might be solved by draining the water, using sand drains [1/], to an underlying unsaturated zone, providing that such an outlet exists.

Extending Water-level Data

As any network of observation wells has limited coverage, it is sometimes necessary to extend existent water-level data to sites remote from observation wells. Even where an observation well is nearby, the length of water-level record may be inadequate for the problem in hand, especially when a more complete knowledge of the water-level extremes is required. Suggested below are some methods by which water-level data may be extended.

Shown in figure 4 is a profile of the water table across Suffolk County from Sayville to Setauket (Lusczynski and Johnson, 1951, pl. 4, line H-H'). As the water table of Suffolk County slopes very gently, the gradient being, in general, less than 15 feet per mile, the altitude of the water table at an intermediate point can be obtained by straight-line interpolation between two known points, within certain limits of distance. For example, three wells S3496 (pl. 1, rect. D-13), S3736 (pl. 1, D-12), and S3545 (pl. 1, D-13), north of Sayville (fig. 1) lie approximately in a straight line. The altitudes of the water levels in these wells at the end of December 1950 were 46.3, 42.3, and 33.6 feet above mean sea level, respectively (Lusczynski and Johnson, 1951). The distance between wells S3496 and S3736 is about 2,120 feet; between S3736 and S3545 about 3,720 feet, and between wells S3496 and S3545 measured along a connecting line through well S3736 about 5,840 feet. Proportioned according to these distances, the estimated altitude of the water level in well S3736 is 41.7 feet or 0.6 foot below that actually measured.

Important to the use of such a procedure is the assumption that the slope of the water table is constant. Near large streams, pumping wells, recharge wells and basins, and waste-disposal beds, the water table is a markedly curved surface and the results obtained by this procedure should be qualified accordingly.

When it is not possible to obtain 3 wells lying even approximately in a straight line, a local water-table contour map may be used in the solution of this type of problem. Distance measurements on such a map should be made perpendicular to the contour lines.

1/. Sand drains are vertical columns of sand penetrating soil of low permeability and of high compressibility. They are constructed by boring holes into the soil to a predetermined depth and backfilling with coarse sand.

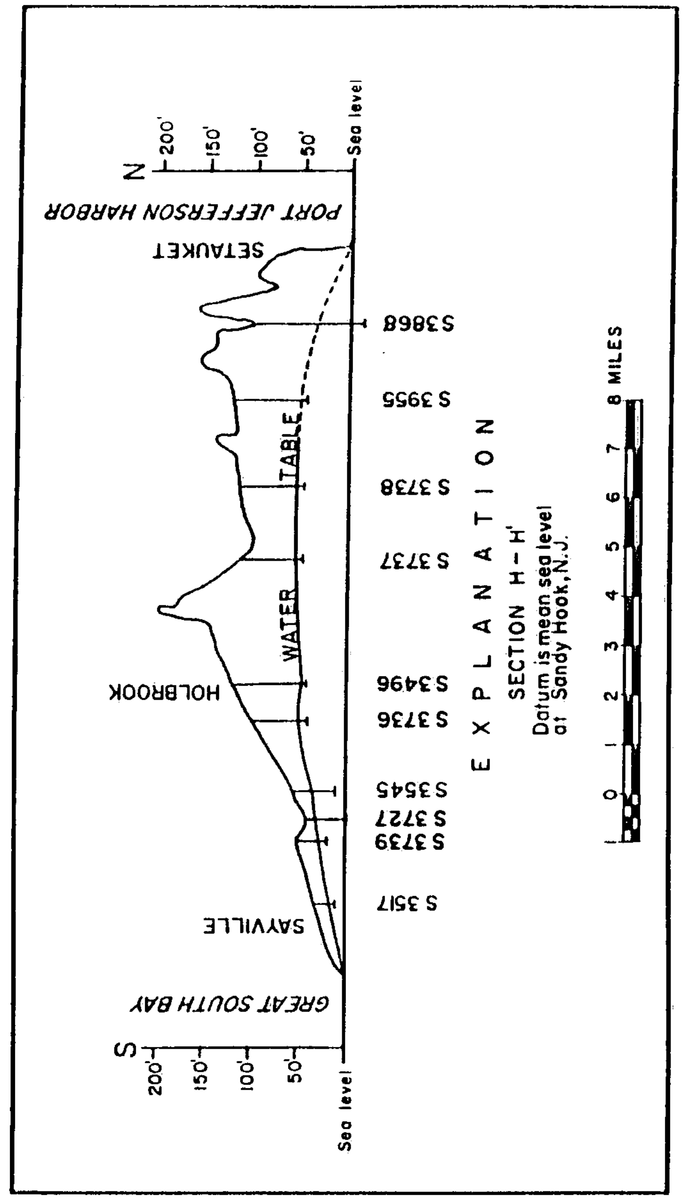

Figure 4.—Profile of the water table in Suffolk County from Sayville to Setauket, Long Island, N.Y. at the end of December 1950.

Extension of the short-term water-level record for a well can be made by correlating, for the same period, the short-term record with the long-term record of a nearby well. In figure 5, the end of the month water-level measurements for 1945 and 1946 in well S3496 (see table 3 for the source of basic data) have been plotted against the corresponding measurements for well S3736. A straight line, termed a regression line, has been drawn through the greatest concentration of points. Although this has been done by eye for simplicity, a more accurate plotting would be obtained by the use of the method of least squares. The month-end water levels for 1950 for well S3736 were estimated, using the observations in well S3496 for 1950 and the regression line of figure 5. These estimates compare with the actual field measurements as shown below:

Altitude of water level in well S3736 a/

Date 1950	Regression line	Field measurement	Difference
Jan.	44.0	44.2	-0.2
Feb.	43.5	43.4	+ .1
Mar.	43.1	43.1	0
Apr.	42.9	43.0	- .1
May	42.6	42.9	- .3
June	42.6	42.5	+ .1
July	42.6	43.0	- .4
Aug.	42.9	42.8	+ .1
Sept.	42.9	43.0	- .1
Oct.	42.6	42.6	0
Nov.	42.4	42.2	+ .2
Dec.	42.1	42.3	- .2

a/ Feet above mean sea level.

Based on a correlation of 2 years of water-level record, the error incurred in estimating water levels for the well concerned 5 years later, was 0.4 foot or less.

Besides supplying intermediate record, it is often necessary to estimate maximum and minimum water levels. The highest water level measured at well S3496, during the period 1942 to 1956, is 52.7 feet above mean sea level (June 22, 1956). Using this value in conjunction with the regression line in figure 5, the maximum water level for well S3736 is estimated as 48.1 feet above mean sea level. Based on monthly measurements since 1943, the highest water level observed for well S3736 was 48.7 feet above mean sea level (Sept. 28, 1956). The estimate was thus 0.6 foot too low. A similar comparison for the lowest water level on record, using an observed low of 45.7 for well S3496, shows the estimated lowest water level for well S3736 to be 41.6 feet above mean sea level, which is the same as that

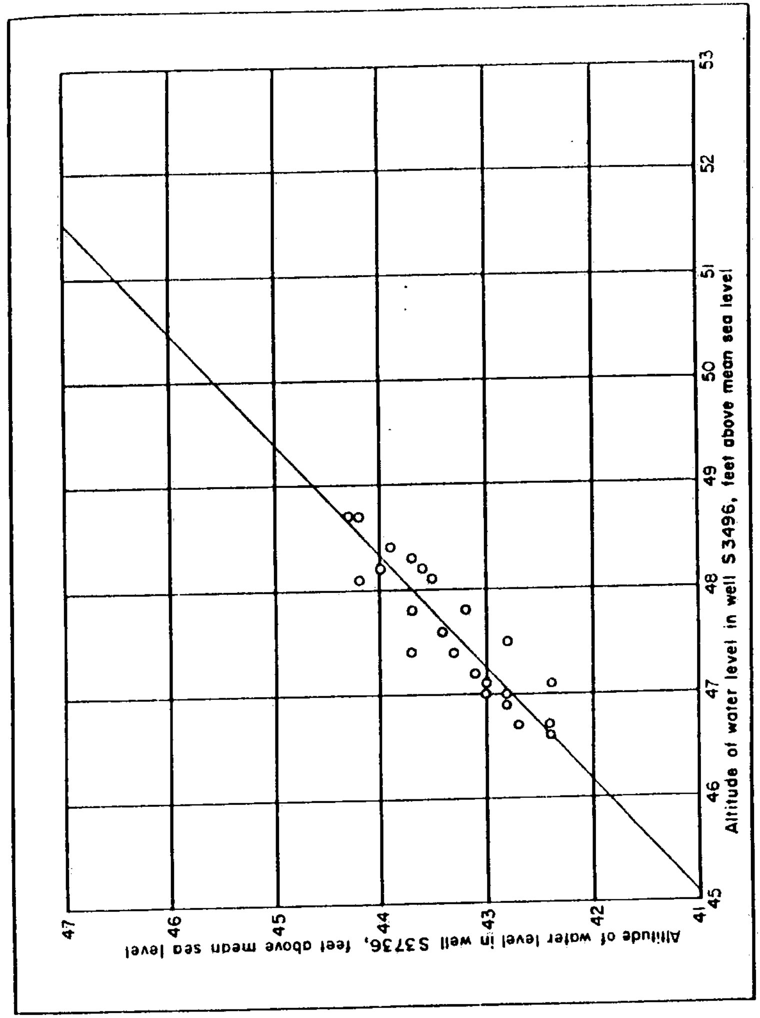

Figure 5.--Correlation of the month-end water-level measurements in wells S3496 and S3736 for 1945-46.

based on actual measurement. Predictions outside the range of observed data are probably less reliable than estimates made within the range of observation.

Correlation of water-level data for two wells requires that hydrologic conditions affecting the water level in each well be essentially the same. Similarly, the surrounding topographic and geologic conditions governing ground-water recharge and discharge must remain relatively unchanged if any previously determined correlation is to remain valid.

Projection of water-level data, for a single well, into the future to obtain infrequent high or low water levels is perhaps the least reliable procedure of all the methods herein described. Even so, problems such as those involving foundations and cesspools make it desirable to obtain some estimate of the extreme water-level stages, and of course such an estimate should be used with caution. The following method has been adapted from the statistical procedures found useful in estimating peak flood flows (Wisler and Brater, 1949, p. 336-41).

Tabulated below are the highest water-level altitudes occurring annually for well S1806, at Pinelawn (pl. 1, C-9), from 1933 to 1956 (see table 3 for reference sources of these data).

Year	Annual maximum altitude of water level (feet above msl)
1933	54.0
1934	55.5
1935	55.9
1936	55.3
1937	57.3
1938	59.1
1939	61.7
1940	58.4
1941	56.8
1942	56.5
1943	56.4
1944	58.4

Year	Annual maximum altitude of water level (feet above msl)
1945	57.1
1946	57.4
1947	55.7
1948	58.4
1949	59.1
1950	55.2
1951	55.7
1952	58.1
1953	59.6
1954	56.7
1955	58.5
1956	59.1

These can be arranged in the following manner:

Range of annual water-level maxima	Midpoint	Cumulative number of occurrences	Cumulative percentage of total occurrences
54.0 to 55.99	55.0	24	100
56.0 to 57.99	57.0	17	71
58.0 to 59.99	59.0	10	42
60.0 to 61.99	61.0	1	4.2

Shown in figure 6 is a logarithmic-probability plot of the cumulative percentage of total occurrences versus the corresponding midpoint water level. This type of plot has been used in preference to an arithmetic-probability plot or an arithmetic plot, because a straight line or a flat curve, obtained from the logarithmic-probability plot, can be extended with less error than the one of sharper curvature obtained from the other types of plot. Prediction of the occurrence of water-level extremes is as follows: assume that it is desired to determine the maximum water level that would occur at well S1806 once in every 100 years (a one percent occurrence). From the curve, the midpoint water-level altitude corresponding to a one percent occurrence is about 63.5 feet. As the interval used is 2 feet, the upper limit and maximum water-level altitude would be 64.5 feet, or rounded off 65 feet above mean sea level. Extending water-level data by this method required that hydrologic conditions influencing future water-levels follow a pattern similar to that in the past. The longer the previous water-level record, the firmer will be the future prediction.

Land use and ground-water development can markedly change this hydrologic pattern. For instance, extensive sewering or pumping in the vicinity of well S1806 would change conditions of ground-water recharge and would probably produce a permanent lowering of the water table. Thus estimates of future maximum stages of the water table, based on data now available would be too high. Similarly, in the same situation, if the same procedure is applied to predict infrequent minimum water-level stages, the predicted minimum water-level may be considerably above the actual minimum water level.

Water-level Data in this Report

Presented in table 1 is a summary of well data and water levels for Suffolk County, Long Island, N. Y. for wells listed in this report. Included are the highest and lowest readings with corresponding dates of measurement, the number of years for which measurements are available, the range of water-level fluctuation and the approximate altitude of land surface at each observation well.

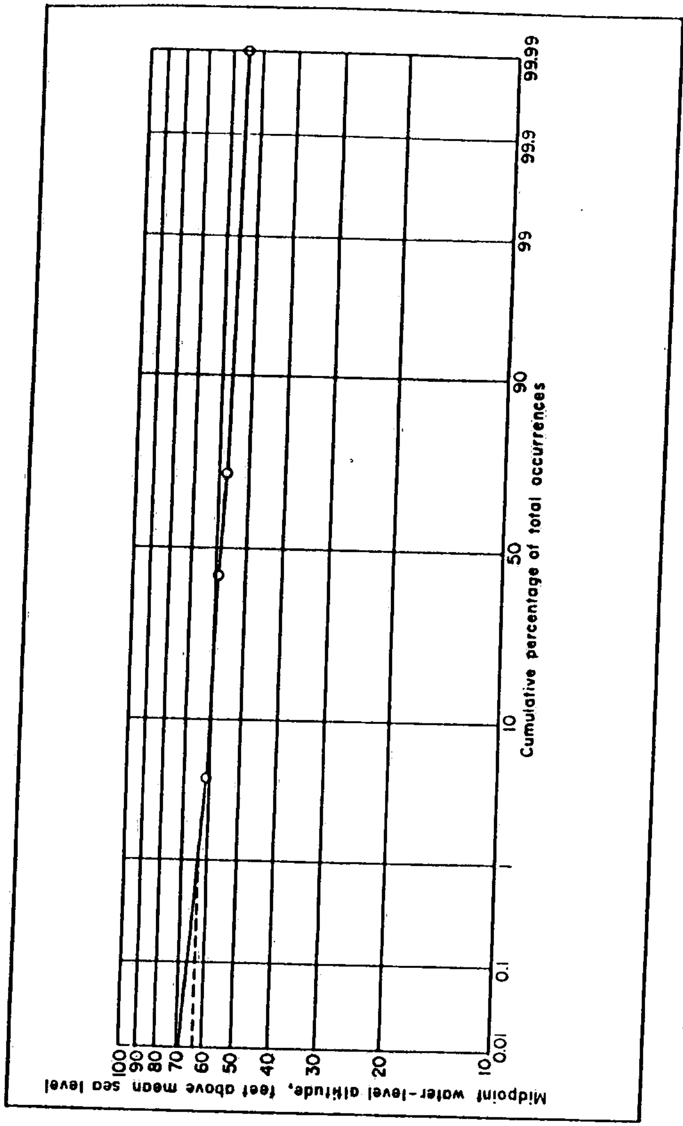

Figure 6.--Extension of the water-level record of well S1806 by means of a logarithmic-probability plot.

More than 4,000 water-level measurements made in 65 water-table wells in Suffolk County are presented in table 2. Present release of the measurements for many of these wells completes, to date (1956), the published record that was discontinued in 1950. Water-level measurements for observation wells screened in the deeper formations -- the Lloyd sand member of the Raritan formation and the Magothy(?) formation, are published in the annual water-level reports (table 3) or are otherwise available at the offices of the U. S. Geological Survey, 1505 Kellum Place, Mineola, N. Y.

Determination of the altitudes of the water levels listed in table 2 were made in two steps. First, the depth to water was measured from a selected point on or near the top edge of the well that is designated the measuring point of the well and then second, for purposes of comparison with the water levels in other wells, the depth-to-water measurement was converted to an altitude above mean sea level. This is accomplished by simple subtraction of the depth-to-water measurement from the altitude of the measuring point.

Measurements of depth to water in each observation well were made by trained personnel using a steel tape or were obtained from the charts of water-stage recorders. The error in measurement is considered to be generally less than 0.03 foot.

The altitude of the measuring point at each observation well was determined by spirit leveling from established bench marks. Those based on first-order leveling by the U. S. Coast and Geodetic Survey were used in most cases as the initial basic control, but in some instances bench marks based on third-order leveling by the U. S. Corps of Engineers had to be used. Both agencies have used mean sea-level datum. For uniformity the Geological Survey, where possible, has used the sea-level datum and bench marks established by the Coast and Geodetic Survey. In this report water-level measurements in wells whose measuring-point altitudes are based on the Corps of Engineers bench marks have been corrected by the addition of 0.31 foot to the tabulated measurements. (See wells S1813, S1815, S1816, and S3112 in table 2).

A current general review of field notes has also indicated that minor inaccuracies in the altitude of the measuring point of some observation wells have resulted from errors made in running levels from bench marks to the measuring points. Water-level measurements made at these wells and appearing in table 2 have also been converted. However, as some uncorrected measurements have been previously published, in both instances the correction factor appears in a footnote to the tabulated measurements. (See wells S3515, S3536, S4367, S5615, and S8853).

Annual water-level reports of the U. S. Geological Survey containing published water-level record for Suffolk County are appropriately listed in table 3 for all wells that have had any record published. Table 3 also shows the present (1956) measurement status of each well, and identifies those wells whose record is contained in this report.

Table 1.--Summary of well data and ground-water levels in Suffolk County, Long Island, N. Y., included in this report

[Wells appearing in the table below are currently (Jan. 1, 1957) scheduled for periodic measurement unless otherwise footnoted. Water levels in feet with reference to mean sea level datum at Sandy Hook, N. J.]

Well number	Map coordinates	Latitude	Longitude	Location	Owner	Well data: Diameter (inches)	Well data: Depth (feet)	Well data: Altitude of land surface at well (feet)	Ground-water levels: Date of first measurement	Number of record years through 1956	Lowest water level: Altitude (feet)	Lowest water level: Date	Highest water level: Altitude (feet)	Highest water level: Date	Range of water level fluctuation (feet)
5570	F-19	40°59'18"	72°32'06"	Route 25 and Pacific Ave., Mattituck	Mattituck Fire Dept.	6	40.4	13	July 14, 1949	8	1.46	Oct. 4, 1950	3.67	Apr. 1, 1953	2.21
5597	G-20	41°02'12"	72°26'16"	S. Harbor La., Southold	Southold Fire Dept.	6	49.9	11	July 13, 1949	8	.16	Dec. 29, 1949	1.89	Apr. 2, 1951	1.73
5599	G-20	41°02'32"	72°26'16"	do.	do.	6	44.7	10	July 13, 1949	8	.07	Dec. 29, 1949	3.43	Apr. 2, 1951 May 4, 1952	3.36
51812	I-12	40°50'00"	73°08'40"	Smithtown Blvd. and Nichols Rd., Ronkonkoma	U.S.G.S.*	16	37.0	69	Apr. 17, 1937	20	44.10	Jan. 29, 1951	51.09	May 27, 1952	6.99
51813	D-12	40°48'13"	73°08'40"	Johnson Ave. near Terry Rd., Ronkonkoma	do.	16	39.3	59	Nov. 4, 1939	18	36.77a	Jan. 29, 1951	40.41a	May 25, 1953	3.64
51815	D-11	40°47'00"	73°14'17"	Suffolk and Eastern Aves., Brentwood	do.	16	39.2	72	Dec. 2, 1939	18	42.74a	Jan. 29, 1951	50.00a	Dec. 27, 1952	7.26
51816	D-10	40°45'58"	73°16'41"	Brentwood and Commack Rds., Deer Park	do.	16	36.5	85	Dec. 8, 1939	18	53.95	Jan. 22, 1951	61.73	May 26, 1953	7.76
52454	C-10	40°42'03"	73°19'20"	Near Deer Park Ave. at L.I.R.R. Station, Babylon	L.I.R.R.**	16	60.8	13	Sept. 21, 1940	17	6.70	Oct. 4, 1951	9.32	Feb. 23, 1954	2.62
52485	E-15	40°51'11"	72°51'28"	Brookhaven National Laboratory, Upton	do.	8	75.0	68	July 20, 1948	9	32.85	Jan. 30, 1951	38.92	June 25, 1956	6.07
52676	F-19	40°59'42"	72°31'18"	Bergen Ave. and Cox Neck Rd., Mattituck	William Lindsay	6	61.2	15	Sept. 7, 1949	8	3.20	Oct. 5, 1950 Nov. 2, 1950	8.24	May 27, 1952	5.04
53112	C-9	40°44'57"	73°22'53"	Long Island Ave. and Little East Neck Rd., Wyandanch	N.Y.C.B.W.S.***	2	32.5	70	Aug. 30, 1941	16	51.67a	Oct. 30, 1951	58.89a	Apr. 28, 1953	7.22
53497	D-13	40°48'52"	73°00'42"	Long Island Ave. and Waverly Ave., Holtsville	U.S.G.S.	16	64.9	104	Nov. 8, 1942	15	45.33	Feb. 26, 1951	51.85	June 22, 1956	6.52
53515	C-10	40°44'30"	73°19'33"	E. 5th Ave. near Brook St., Bay Shore	N.Y.C.B.W.S.	2	35.0	44	Mar. 5, 1907	15a	30.53a	Dec. 21, 1950	34.78a	Mar. 31, 1951	4.25
53518	D-11	40°45'47"	73°12'38"	Islip Ave. near Locust St., Central Islip	do.	2	34.7	50	Mar. 22, 1907	18	29.72	Nov. 27, 1950	33.81	Apr. 30, 1953	4.09
53519	D-11	40°45'26"	73°11'44"	Carleton Ave. near Manhattan Blvd., Central Islip	do.	2	33.8	37	Mar. 22, 1907	18	23.60	Dec. 1, 1909	27.40	Apr. 30, 1953	3.80
53524	D-15	40°47'38"	72°54'33"	Park Rd. near Yaphank Ave., Yaphank	do.	2	35.2	46	Mar. 8, 1907	18	21.47	Dec. 30, 1943	23.86	Apr. 6, 1907	2.16
53527	D-16	40°48'24"	72°56'41"	Horseblock Rd., Plainfield	do.	2	60.2	85	Mar. 7, 1907	18	30.81	Feb. 26, 1951	35.81	June 20, 1952	5.00
53528	D-16	40°48'06"	72°55'37"	Horseblock Rd., Brookhaven	do.	2	34.1	38	Mar. 8, 1907	18	29.07	Nov. 29, 1944	[illegible]	May 25, 1952	4.41
53530	D-16	40°49'18"	72°56'10"	Near L.I.R.R., west of Yaphank Ave., Yaphank	do.	2	45.5	66	Mar. 8, 1907	18	31.40	Jan. 25, 1951	35.66	June 20, 1952	4.47
53531 (59110)	D-15	40°48'32"	72°51'00"	River Rd., north of Montauk Highway, South Haven	do.	2	35.5	25	Aug. 9, 1907	18	9.16	Dec. 11, 1909	10.82	May 28, 1953	1.66
53533	I-16	40°52'24"	72°55'23"	South of Middle Country Rd., Middle Island	do.	2	31.7	62	Apr. 4, 1907	15a	44.87	Jan. 26, 1951	50.00a	June 8, 1908	5.13

See footnotes at end of table.

Table 1. (Continued)

(Water levels in feet with reference to mean sea level datum at Sandy Hook, N. J.)

Well number	Map coordinates	Latitude	Longitude	Location	Owner	Well data: Diameter (inches)	Well data: Depth (feet)	Well data: Altitude of land surface at well (feet)	Ground-water levels: Date of first measurement	Number of record years through 1956	Lowest water level: Altitude (feet)	Lowest water level: Date	Highest water level: Altitude (feet)	Highest water level: Date	Range of water level fluctuation (feet)
33536	I-16	40°49'53"	72°46'30"	Bernstein Blvd., Center Moriches	N.Y.C.B.W.S.	2	60.1	74	Apr. 20, 1907	10	22.73a	Mar. 2, 1951	28.65a	June 6, 1908	5.90
33538	E-18	40°51'14"	72°37'18"	Route 113 near intersection with Route 31, Flanders	do.	2	59.4	34	Jan. 11, 1908	17	14.16	Jan. 25, 1951	18.16	June 24, 1953	4.00
33540	E-17	40°50'38"	72°42'00"	Riverhead Rd., Speonk	do.	2	31.8	32	Mar. 8, 1907	15	18.28	Mar. 2, 1951	23.57	June 24, 1952	5.29
33541	D-17	40°49'48"	72°40'48"	Old Country Rd., Speonk	do.	2	28.4	26	Mar. 9, 1907	14b	20.78	Jan. 28, 1951	25.48	May 26, 1953	4.70
33542	E-17	40°50'48"	72°40'49"	North of Old Country Rd., near L.I.R.R. crossing, Speonk	do.	2	34.6	72	Apr. 12, 1907	11	17.98	Jan. 31, 1951	23.87	June 24, 1953	6.45
33544	D-18	40°48'58"	72°38'10"	Near L.I.R.R., Westhampton	do.	2	30.4	26	Mar. 18, 1907	15a	20.15	Jan. 23, 1951	24.67	Apr. 30, 1953	4.52
33727	D-13	40°46'18"	73°04'53"	Church St., West Sayville	do.	2	36.7	40	July 18, 1943	14b	29.21	Jan. 25, 1951	34.42	May 26, 1953	5.21
33731	D-14	40°46'49"	72°57'30"	Schwerger Ave., Hagerman	do.	2	44.3	52	May 28, 1943	13a	32.13	Jan. 25, 1951	36.87	May 26, 1953	4.74
33732	E-14	40°54'28"	72°59'15"	Mt. Sinai Rd., Miller Place	do.	2	76.4	110	Oct. 6, 1943	14	31.55	Jan. 9, 1949	41.34	Oct. 6, 1954	9.79
33734	D-12	40°47'58"	73°08'12"	Schmidt St., Holbrook	U.S.G.S.	1 1/4	39.1	88	July 19, 1943	14	41.60	Feb. 21, 1951	48.67	Sept. 28, 1954	7.07
35066	F-19	40°58'05"	72°32'48"	South of Route 25, Mattituck	C. Kolenski	5	60.4	13	Sept. 6, 1949	8	5.07	Oct. 5, 1950	6.80	May 27, 1953	1.83
34269	F-17	40°57'04"	72°44'05"	Reeves Ave., Riverhead	U.S.G.S.	4	65.1	60	Aug. 8, 1945	12	12.40	Oct. 31, 1950	16.98	June 28, 1953	4.19
34567	D-10	40°48'56"	73°16'35"	Florida Ave., Commack	H. Geetsinger	20	125.9	176	Aug. 2, 1945	8b	81.56a	Sept. 26, 1952	89.53a	Aug. 27, 1953	7.97
34577	E-12	40°52'35"	73°08'25"	Moriches Rd., St. James	J. Zimmerman	36	47.8	106	Aug. 1, 1945	12	60.42	Jan. 11, 1951	66.92	June 20, 1956	6.50
34523	F-18	40°56'07"	72°39'32"	Route 25 and Northville Turnpike, Riverhead	U.S.G.S.	1 1/4	13.1	16	Aug. 2, 1945	12	8.00	Oct. 1, 1951	10.82	May 1, 1953	2.82
34528	F-16	40°57'19"	72°46'04"	Sound and Twomey Aves., Riverhead	J. Greenseen	4	107.4	113	Oct. 4, 1945	12	20.88	Feb. 28, 1951	25.79	Apr. 1, 1955	4.91
34678	F-18	40°58'40"	72°37'36"	Near Church La., Laurel	T. T. Luce	8	97.1	81	June 22, 1949	8	7.37	Jan. 30, 1951	11.80	May 27, 1953	4.43
35015	F-21	40°57'21"	72°20'12"	Bridgehampton	A. Tyska	12	180.0	117	Aug. 9, 1950	7	15.74a	Jan. 23, 1951	20.77a	Jan. 25, 1955	5.03
36522	G-20	41°04'22"	72°26'20"	Horton's La., Southold	J. McCabe	26	45.4	48	Aug. 9, 1949	8	1.78	Apr. 24, 1950	5.89	May 27, 1953	4.11
36528	H-20	41°05'04"	72°25'00"	Boisseau Ave., Southold	Southold Fire Dept.	6	61.1	14	July 18, 1949	8	-.02	Dec. 29, 1949	2.94	Feb. 28, 1952	2.96
36529	G-20	41°05'40"	72°26'08"	Route 25, Southold	R. Heilig	1 1/4	38.4	34	Aug. 9, 1949	8	1.48	Feb. 1, 1950	4.30	May 27, 1953	2.82
36537	G-20	41°01'18"	72°28'36"	Cox La. and Route 25, Cutchogue	Cutchogue Fire Dept.	6	44.4	11	July 14, 1949	8	1.70	Oct. 8, 1953	6.04	May 1, 1953	2.94
36540	G-20	41°00'28"	72°29'43"	Alvah's La., Cutchogue	do.	6	48.6	21	July 14, 1949	8	3.21	Nov. 29, 1950	7.53	May 27, 1953	4.32
36543	G-20	41°00'18"	72°28'18"	New Suffolk La., Cutchogue	do.	6	45.6	15	July 14, 1949	8	1.32	Nov. 2, 1950	3.82	May 1, 1953	2.40
36544	F-20	40°59'52"	72°28'56"	do.	do.	6	41.6	10	July 14, 1949	8	.36	Aug. 30, 1950	2.13	Apr. 2, 1953	1.75
36555	G-19	41°01'40"	72°30'55"	Oregon Rd. and Depot La., Cutchogue	A. Krupski	36	62.8	58	Sept. 7, 1949	8	3.12	Mar. 28, 1950	8.65	Dec. 28, 1954	5.53
36560	F-19	40°59'10"	72°33'57"	Cox Neck Rd., Mattituck	Mattituck Fire Dept.	6	30.4	24	July 14, 1949	8	4.27	Nov. 2, 1950	8.23	May 27, 1953	3.96
36566	F-19	40°57'58"	72°32'38"	Peconic Bay Blvd., Mattituck	do.	6	15.0	10	July 14, 1949	8	1.30	Dec. 30, 1949	2.94	Apr. 1, 1953	1.64
37881	H-23	41°09'17"	72°14'44"	Route 25 near Orient Pt., Orient	E. King	30	22.3	12	Sept. 20, 1948	8	.19	June 26, 1952	2.92	Apr. 2, 1953	2.73

See footnotes at end of table.

Table 1. (Continued)

(Water levels in feet with reference to mean sea level datum at Sandy Hook, N. J.)

Well number	Map coordinates	Latitude	Longitude	Location	Owner	Well data: Diameter (inches)	Well data: Depth (feet)	Well data: Altitude of land surface at well (feet)	Date of first measurement	Number of record years through 1956	Lowest water level: Altitude (feet)	Lowest water level: Date	Highest water level: Altitude (feet)	Highest water level: Date	Range of water level fluctuation (feet)
S7286	N-22	41°08'20"	72°18'03"	Orchard St., Orient	E. Petty	30	26.1	18	Jan. 11, 1949	8	1.09	Dec. 29, 1949 Feb. 1, 1950	3.55	Apr. 2, 1952 May 6, 1953	2.46
S7439	F-21	40°56'29"	72°20'35"	Cook La., Bridgehampton	E. Sommerfeld	12	107.0	57	Aug. 18, 1950	7	13.40	May 31, 1951	18.86	Oct. 23, 1954	5.46
S8832	E-21	40°54'16"	72°24'21"	North Sea Rd., Southampton	U.S.G.S.*	2	42.0	47	Aug. 18, 1950	7	4.69	Jan. 23, 1951	11.26	May 26, 1953	6.57
S8835	F-22	40°57'55"	72°17'58"	Road, located 1.2 mi. east of Sag Harbor Rd. and 1.8 mi. north of Route 27, Bridgehampton	do.	2	13.2	21	Oct. 5, 1950	7	13.27	Jan. 23, 1951	18.30	May 26, 1953	5.03
S8838	F-22	40°56'28"	72°16'46"	Route 27, Bridgehampton	Bridgehampton Fire Dept.	6	44.4	28	July 31, 1950	7	8.46	Dec. 26, 1950	13.15	May 26, 1953	5.69
S8841	F-23	40°58'19"	72°13'19"	Hands Path, Hardscrabble	C. Dominy	36	59.7	64	Aug. 2, 1950	7	9.87	Mar. 28, 1951	14.30	June 25, 1953	4.88
S8842	F-22	40°57'09"	72°17'57"	Sag Harbor Rd., Bridgehampton	W. Skubach	36	25.2	38	July 27, 1950	7	13.94	Oct. 30, 1950	20.14	May 26, 1953	6.20
S8843	F-23	40°58'16"	72°11'02"	Three Mile Harbor, East Hampton	H. Lester	30	26.6	35	July 28, 1950	7	7.38	Jan. 23, 1951	11.36	June 25, 1953	4.08
S8844	F-22	40°59'47"	72°17'13"	Route 114 and Jermain Ave., Sag Harbor	Sag Harbor Fire Dept.	6	84.6	19	Aug. 4, 1950	7	4.46	Dec. 26, 1950	7.42	June 21, 1954	2.96
S8846	F-22	40°56'41"	72°18'17"	Lumber La., Bridgehampton	Tiffany	36	42.5	57	Oct. 30, 1950	7	13.11	Oct. 30, 1950	19.07	June 21, 1954	5.96
S8851	G-20	41°01'17"	72°28'40"	Near Cutchogue R.R. Station, Cutchogue	U.S.G.S.	2	54.8	42	Aug. 24, 1950	7	3.33	Nov. 29, 1950	8.21	May 27, 1952	4.88
S8853	H-21	41°05'52"	72°22'44"	Route 25, Greenport	A. Dutkowski	1¼	34.0	15	Aug. 31, 1950	7	.90a	July 2, 1953	3.46a	Apr. 2, 1953	2.56
S8854	H-21	41°06'17"	72°22'02"	Kaplan and North Sts., Greenport	U.S.G.S.	1¼	29.4	9	Aug. 31, 1950	7	.88	Dec. 28, 1950 Dec. 29, 1956	2.40	Apr. 2, 1953	1.52
S9130	D-15	40°48'32"	72°53'02"	River Rd., north of Montauk Highway, South Haven	do.	2	28.2	27	June 23, 1952		see S8621				
S15166	F-22	40°57'45"	72°17'55"	Sag Harbor Tpke., 0.2 mi. south of Scuttlehole Rd., Bridgehampton		2	80.5	78	Oct. 5, 1950	7	15.17	Feb. 27, 1951	22.37	Oct. 21, 1954	7.20

* U.S.G.S. — United States Geological Survey.
** L.I.R.R. — Long Island Railroad
*** N.Y.C.B.W.S. — New York City Board of Water Supply.
a —Maximum and minimum water levels are adjusted for correction listed in table 2. No correction is required for other water levels listed in table 1.
b —Not currently (Jan. 1, 1957) scheduled for periodic measurement.

Table 2.--Water-level records for selected water-table wells in Suffolk County, Long Island, N. Y.

S570. Mattituck Fire Dept. Route 25 and Pacific Ave., Mattituck. Lat. 40°59'18", long. 72°32'06". Drilled fire well in deposits of late Pleistocene age, diameter 6 inches, depth 43.4 feet. Highest water level 3.67 feet above msl, Apr. 1, 1953; lowest 1.64 feet above msl, Oct. 4, 1950. Records published, including this report: 1949-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1949		Apr. 27	2.83	June 26	2.73
July 14	2.08	June 4	2.67	Aug. [illegible]	2.21
Aug. [illegible]	1.97	July 30	2.46	[illegible]	2.10
[illegible]	2.03	Aug. 30	2.12	Oct. [illegible]	2.10
Sept. 30	2.04	Oct. [illegible]	1.98	Nov. [illegible]	2.35
Oct. [illegible]	1.95	[illegible]	1.72	Dec. [illegible]	2.31
Dec. [illegible]	2.11	Nov. [illegible]	1.80		1.86
29	1.73	Dec. [illegible]	2.13	1954	
1950		1952		Mar. [illegible]	2.60
Jan. 31	1.73	Jan. 31	3.00	Apr. [illegible]	2.30
Feb. 28	2.33	Feb. 28	3.05	Sept. [illegible]	2.35
Mar. [illegible]	2.73	Mar. [illegible]	3.20	Oct. [illegible]	2.63
Apr. [illegible]	2.03	Apr. [illegible]	3.73	Dec. [illegible]	2.90
May [illegible]	2.14	May [illegible]	3.03	1955	
June [illegible]	2.02	June [illegible]	2.60	Mar. 31	2.63
July [illegible]	1.88	July [illegible]	2.38	June [illegible]	2.52
Aug. [illegible]	1.73	Aug. [illegible]	2.38	Aug. [illegible]	2.01
Sept. [illegible]	1.92	Sept. [illegible]	2.18	Oct. [illegible]	1.91
Oct. [illegible]	1.64	Oct. [illegible]	2.05	Dec. [illegible]	1.89
Nov. [illegible]	1.97	Nov. [illegible]	2.35	1956	
Dec. [illegible]	1.95	Dec. [illegible]	2.28	May [illegible]	2.85
1951		1953		June [illegible]	2.70
Feb. 1	2.23	Apr. 1	3.67	Sept. [illegible]	2.35
28	2.60	May 1	3.60	Dec. [illegible]	2.79
Mar. 29	2.71	27	3.30		

S599. Southold Fire Dept. S. Harbor La., Southold. Lat. 41°02'32", long. 72°26'16". Drilled fire well in deposits of late Pleistocene age, diameter 6 inches, depth 46.7 feet. Highest water level 3.65 feet above msl, Apr. 8, May 6, 1953; lowest 0.07 foot above msl, Dec. 29, 1949. Records published, including this report: 1949-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1949		Apr. [illegible]	0.65	June [illegible]	0.36
July 13	1.60	June [illegible]	0.35	Aug. [illegible]	1.65
Aug. [illegible]	1.45	July [illegible]	1.73	[illegible]	1.82
[illegible]	1.36	Aug. [illegible]	1.60	Oct. [illegible]	0.10
Sept. [illegible]	1.23	Oct. [illegible]	1.44	Nov. [illegible]	1.76
Oct. [illegible]	1.30	[illegible]	1.60	Dec. [illegible]	0.72
Dec. [illegible]	1.30	Nov. [illegible]	1.87		3.49
[illegible]	.07	Dec. [illegible]	0.08	1954	
1950		1952		Mar. [illegible]	0.40
Feb. [illegible]	.31	Jan. 31	0.60	July [illegible]	1.63
[illegible]	1.73	Feb. [illegible]	0.76	Sept. [illegible]	3.37
Mar. [illegible]	1.72	Mar. [illegible]	3.08	Oct. [illegible]	0.72
Apr. [illegible]	1.32	Apr. [illegible]	0.31	Dec. [illegible]	0.60
May [illegible]	1.37	May [illegible]	0.03	1955	
June [illegible]	1.56	June [illegible]	0.30	Mar. 31	0.37
July [illegible]	1.65	July [illegible]	1.81	June [illegible]	0.73
Aug. [illegible]	1.80	Aug. [illegible]	0.07	Aug. [illegible]	0.02
Sept. [illegible]	1.35	Sept. [illegible]	0.09	Oct. [illegible]	1.78
Oct. [illegible]	1.88	Oct. [illegible]	1.03	Dec. [illegible]	0.08
Nov. [illegible]	1.88	Nov. [illegible]	1.00	1956	
Dec. [illegible]	1.07	Dec. [illegible]	1.10	June [illegible]	0.06
1951		1953		Sept. [illegible]	1.33
Feb. [illegible]	1.90	Apr. [illegible]	3.45	Dec. [illegible]	1.95
[illegible]	2.51	May [illegible]	3.65		
Mar. [illegible]	2.36	[illegible]	3.07		

S697. Southold Fire Dept. S. Harbor La., Southold. Lat. 41°02'12", long. 72°26'16". Drilled fire well in deposits of late Pleistocene age, diameter 6 inches, depth 49.9 feet. Highest water level 1.89 feet above msl, Apr. 8, 1953; lowest 0.14 foot above msl, Dec. 29, 1949. Records published, including this report: 1949-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1949		Apr. [illegible]	1.01	June [illegible]	0.98
July 13	0.91	June [illegible]	1.17	Aug. [illegible]	.93
Aug. [illegible]	.87	July [illegible]	1.18	[illegible]	.96
[illegible]	.92	[illegible]	1.12	Oct. [illegible]	.79
Sept. [illegible]	.86	Aug. [illegible]	.83	Nov. [illegible]	1.08
Oct. [illegible]	.66	Oct. [illegible]	1.08	Dec. [illegible]	1.31
Dec. [illegible]	1.38	Nov. [illegible]	.96	[illegible]	1.70
[illegible]	.14	[illegible]	1.05		
		Dec. [illegible]	.65	1954	
1950		1952		Mar. [illegible]	1.05
Feb. [illegible]	.92	Jan. 31	1.15	July [illegible]	.95
[illegible]	.72	Feb. [illegible]	1.66	Sept. [illegible]	1.37
Mar. [illegible]	.73	Mar. [illegible]	1.38	Oct. [illegible]	1.33
Apr. [illegible]	.62	Apr. [illegible]	1.01	Dec. [illegible]	1.11
May [illegible]	.73	May [illegible]	1.48		
June [illegible]	.73	June [illegible]	.98	1955	
July [illegible]	.76	July [illegible]	1.08	Mar. [illegible]	.87
Aug. [illegible]	.78	Aug. [illegible]	1.08	June [illegible]	1.20
Sept. [illegible]	.65	Sept. [illegible]	1.05	Aug. [illegible]	1.30
Oct. [illegible]	1.10	Oct. [illegible]	1.08	Oct. [illegible]	1.19
Nov. [illegible]	1.06	Nov. [illegible]	1.15	Dec. [illegible]	.97
Dec. [illegible]	.83	Dec. [illegible]	1.67		
1951		1953		1956	
Feb. 1	1.13	Apr. [illegible]	1.89	June 26	.99
[illegible]	1.22	May [illegible]	1.67	Sept. [illegible]	1.30
		[illegible]	1.65	Dec. [illegible]	.93

S1818. U. S. Geol. Survey. Smithtown Blvd. and Nichols Rd., Nesconset. Lat. 40°50'08", long. 73°08'48". Driven observation well in deposits of late Pleistocene age, diameter 1¼ inches, depth 37.0 feet. Highest water level 51.09 feet above msl, May 27, 1939; lowest 44.10 feet above msl, Jan. 25, 1951. Records published, including this report: 1937-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1951		May [illegible]	47.57	1954	
Jan. 25	44.10	June [illegible]	48.23	Mar. [illegible]	46.75
Feb. [illegible]	44.21	July [illegible]	48.98	July [illegible]	47.52
Mar. [illegible]	45.05	Aug. [illegible]	48.26	Sept. [illegible]	47.80
Apr. [illegible]	45.88	Sept. [illegible]	47.60	Oct. [illegible]	47.78
May [illegible]	46.32	Oct. [illegible]	47.30	Dec. [illegible]	47.76
June [illegible]	46.51	Dec. [illegible]	46.77		
July [illegible]	46.32			1955	
Aug. [illegible]	46.00	1953		Mar. [illegible]	48.20
Sept. [illegible]	45.78	Mar. [illegible]	47.49	June [illegible]	48.33
Oct. [illegible]	45.37	Apr. [illegible]	49.17	Aug. [illegible]	47.93
Nov. [illegible]	45.83	May [illegible]	49.23	Sept. [illegible]	47.36
Dec. [illegible]	45.15	June [illegible]	49.83	Dec. [illegible]	49.05
1952		July [illegible]	49.83		
Jan. [illegible]	45.70	Aug. [illegible]	49.06	1956	
Feb. [illegible]	46.02	Sept. [illegible]	48.35	June [illegible]	50.43
Mar. [illegible]	46.72	Oct. [illegible]	48.01	Oct. [illegible]	49.12
Apr. [illegible]	47.08	Dec. [illegible]	47.62	Dec. [illegible]	47.93

S1013. U. S. Geol. Survey. Johnson Ave. near Terry Rd., Ronkonkoma. Lat. 40°48'13", long. 73°08'40". Driven observation well in deposits of late Pleistocene age, diameter 1¼ inches, depth 39.3 feet. Highest water level 40.46 feet above msl, May 25, 1953; lowest 35.77 feet above msl, Jan. 05, 1951. Records published, including this report: 1939-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

S1019. U. S. Geol. Survey. Suffolk and Eastern Aves., Brentwood. Lat. 40°47'00", long. 73°14'17". Driven observation well in deposits of late Pleistocene age, diameter 1¼ inches, depth 39.8 feet. Highest water level 50.08 feet above msl, Dec. 27, 1955; lowest 44.74 feet above msl, Jan. 25, 1954. Records published, including this report: 1939-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

S1046. U. S. Geol. Survey. Brentwood and Commack Rds., Deer Park. [illegible] Driven observation well in deposits of late Pleistocene age, diameter 1¼ inches, depth 35.5 feet. Highest water level [illegible]* feet above msl, May 26, 1953; lowest [illegible]* feet above msl, Jan. 08, 1954. Records published, including this report: 1939-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* Records previously published are in error. Add 0.31 foot to convert previously published measurements to msl, Sandy Hook, N. J. datum.

S1434. Long Island Railroad. Near Deer Park Ave. at L.I.R.R. Station, Babylon. [illegible] Driven observation well in deposits of late Pleistocene age, diameter 1¼ inches, depth 60.0 feet. Highest water level [illegible] feet above msl, Feb. 25, 1949; lowest [illegible] feet above msl, Oct. 4, 1951. Records published, including this report: 1940-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

S1646. Long Island Railroad. Brookhaven National Laboratory, Upton. [illegible] Drilled observation well in deposits of late Pleistocene age, diameter 8 inches, depth 75.0 feet. Highest water level [illegible] feet above msl, June 25, 1956; lowest [illegible] feet above msl, Jan. 30, 1951. Records published, including this report: 1946-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

S4676. William Lindsay. Bergen Ave. and Cow Neck Rd., Mattituck. [illegible] Drilled observation well in deposits of late Pleistocene age, diameter 6 inches, depth 61.0 feet. Highest water level [illegible] feet above msl, May 27, 1953; lowest [illegible] feet above msl, Oct. 5, 1950. Records published, including this report: 1949-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

S5118. City of New York, Board of Water Supply. Long Island Ave. and Little East Neck Rd., Wyandanch. [illegible] Driven observation well in deposits of late Pleistocene age, diameter 2 inches, depth 38.9 feet. Highest water level 58.00* feet above msl, Apr. 26, 1953; lowest 51.67* feet above msl, Oct. 30, 1951. Records published, including this report: 1941-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* Records previously published are in error. Add 0.31 foot to convert previously published measurements to msl, Sandy Hook, N. J. datum.

S5497. U. S. Geol. Survey. Long Island and Waverly Aves., Holtsville. [illegible] Driven observation well in deposits of late Pleistocene age, diameter 1¼ inches, depth 69.3 feet. Highest water level [illegible] feet above msl, June 28, 1956; lowest [illegible] feet above msl, Feb. 05, 1951. Records published, including this report: 1946-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

S3519. City of New York, Board of Water Supply. E. 3d Ave. near Brook St., Bayshore. [illegible] Driven observation well in deposits of late Pleistocene age, diameter 2 inches, depth 33.0 feet. Highest water level [illegible] feet above msl, Mar. 31, 1953; lowest [illegible] feet above msl, Dec. 21, 1950. Records published, including this report: 1907-09, 1948-53.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* Records previously published are in error. Subtract 0.15 foot to convert previously published measurements to msl, Sandy Hook, N. J. datum.

S3518. City of New York, Board of Water Supply. Islip Ave. near Locust St., Central Islip. [illegible] Driven observation well in deposits of late Pleistocene age, diameter 2 inches, depth 34.7 feet. Highest water level [illegible] feet above msl, Apr. 30, 1953; lowest [illegible] feet above msl, Nov. 27, 1950. Records published, including this report: 1907-09, 1942-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

S3519. City of New York, Board of Water Supply. Carleton Ave. near Manhattan Blvd., Central Islip. [illegible] Driven observation well in deposits of late Pleistocene age, diameter 2 inches, depth 33.0 feet. Highest water level [illegible] feet above msl, Apr. 30, 1953; lowest [illegible] feet above msl, Dec. 3, 1909. Records published, including this report: 1907-09, 1946-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

S3526. City of New York, Board of Water Supply. Park Rd. near Yaphank Ave., Yaphank. [illegible] Driven observation well in deposits of late Pleistocene age, diameter 2 inches, depth 35.2 feet. Highest water level [illegible] feet above msl, Apr. 6, 1908; lowest [illegible] feet above msl, Dec. 30, 1943. Records published, including this report: 1907-09, 1942-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

S3527. City of New York, Board of Water Supply. Hornebloom Rd., Plainfield. Lat. 40°48'26", long. 72°54'41". Driven observation well in deposits of late Pleistocene age, diameter 8 inches, depth 80.2 feet. Highest water level 35.89 feet above msl, June 30, 1956; lowest 30.81 feet above msl, Feb. 26, 1951. Records published, including this report 1907-09, 1942-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1951		May 27	33.86	1954	
Jan. 25	30.97	June 24	34.20	Mar. 26	32.08
Feb. 26	30.81	July 22	34.57	June 24	33.08
Apr. 4	31.36	Aug. 26	34.43	Sept. 29	33.36
May 3	31.98	Sept. 23	34.19	Oct. 27	33.54
June 4	32.40	Nov. 3	33.68	Dec. 23	33.58
28	32.45	Dec. 1	33.26	1955	
July 26	32.75	29	32.90	Mar. 23	34.41
Aug. 30	32.41	1953		June 21	34.16
Oct. 3	33.19	Mar. 31	32.65	Aug. 23	33.61
31	31.65	Apr. 28	33.83	Sept. 30	33.38
Nov. 27	31.57	May 25	35.18	Dec. 22	34.49
Dec. 19	31.39	June 23	35.75	1956	
1952		Aug. 5	35.53	June 30	35.89
Jan. 25	31.87	26	35.36	Oct. 3	34.91
Feb. 26	31.65	Oct. 6	34.53	Dec. 18	33.77
Mar. 25	32.40	Nov. 9	33.88		
Apr. 22	33.82	Dec. 1	33.66		
		17	33.19		

S3529. City of New York, Board of Water Supply. Horseblock Rd., Brookhaven. Lat. 40°48'08", long. 72°55'37". Driven observation well in deposits of late Pleistocene age, diameter 8 inches, depth 36.1 feet. Highest water level 38.48 feet above msl, May 25, 1953; lowest 34.07 feet above msl, Nov. 29, 1944. Records published, including this report 1907-09, 1942-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1951		Aug. 30	35.77	Feb. 25	36.17
Jan. 25	34.78	Oct. 1	36.50	Mar. 25	36.79
Feb. 26	35.37	3	35.63	Apr. 27	36.85
Apr. 4	35.73	Nov. 27	36.27	May 27	37.30
May 1	36.01	Dec. 19	35.87	June 23	37.58
June 1	36.23	1952		July 22	37.12
28	36.05	Jan. 25	35.47	Aug. 26	36.92
July 26	35.40	Nov. 6	36.05	Sept. 23	36.38
Oct. 1	35.08	Dec. 1	35.83	Dec. 3	36.05
29	35.52	17	36.29	1955	
1953		1954		Mar. 23	37.41
Mar. 31	37.40	Mar. 26	35.82	June 21	36.86
Apr. 28	38.03	June 30	36.23	Aug. 23	36.79
May 25	38.48	Sept. 29	36.07	Sept. 30	35.73
June 23	38.19	Oct. 27	36.49	Dec. 22	37.58
Aug. 5	37.53	Dec. 23	37.41	1956	
26	37.73			June 20	38.35
Oct. 6	36.68			Oct. 3	36.86
				Dec. 18	36.37

S3530. City of New York, Board of Water Supply. Near L.I.R.R., west of Yaphank Ave., Yaphank. Lat. 40°49'18", long. 72°56'10". Driven observation well in deposits of late Pleistocene age, diameter 8 inches, depth 45.5 feet. Highest water level 35.66 feet above msl, June 30, 1956; lowest 31.40 feet above msl, Jan. 25, 1951. Records published including this report 1907-09, 1942-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1951		May 27	34.01	1954	
Jan. 25	31.40	June 24	34.53	Mar. 29	32.79
Feb. 26	31.82	July 22	34.66	June 30	33.32
Apr. 4	32.41	Aug. 26	34.34	Sept. 29	33.92
May 1	32.91	Sept. 23	33.87	Oct. 28	33.78
June 1	32.87	Nov. 3	33.24	Dec. 23	33.96
28	33.09	Dec. 1	33.36	1955	
July 26	32.80	29	32.72	June 21	34.86
Aug. 30	32.51	1953		Sept. 30	33.19
Oct. 1	32.23	Apr. 3	34.11	Dec. 22	34.90
Nov. 1	31.93	28	34.72	1956	
30	31.84	May 25	35.41	June 30	35.66
Dec. 22	31.75	June 23	35.66	Oct. 3	34.50
1952		Aug. 5	35.03	Dec. 20	33.62
Jan. 25	32.41	26	34.75		
Feb. 26	32.68	Oct. 6	34.05		
Mar. 25	33.38	Nov. 9	33.58		
Apr. 23	33.77	30	33.50		
		Dec. 22	33.19		

S3531*. City of New York, Board of Water Supply. River Rd., north of Montauk Highway, South Haven. Lat. 40°48'32", long. 72°53'07". Driven observation well in deposits of late Pleistocene age, diameter 8 inches, depth 33.5 feet. Highest water level 10.82 feet above msl, May 28, 1953; lowest 9.14 feet above msl, Dec. 11, 1909. Records published, including this report: 1907-09, 1948-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1951		Aug. 5	10.40	Feb. 21	10.38
Jan. 25	9.46	Oct. 7	10.08	Mar. 25	10.36
Feb. 26	9.71	Nov. 9	10.06	Apr. 27	10.39
Apr. 4	9.75	Dec. 1	9.95	May 25	10.62
1952		17	10.43	June 21	10.27
June 25	10.35	1954		July 25	10.07
July 30	10.80	Jan. 28	9.74	Aug. 23	10.11
Aug. 27	10.30	Feb. 26	9.38	Sept. 30	9.86
Oct. 1	10.11	Mar. 26	9.63	Nov. 1	10.40
31	9.96	Apr. 28	9.82	28	10.47
Nov. 26	9.88	May 27	10.00	Dec. 28	10.43
Dec. 30	9.70	June 30	10.08	1956	
1953		July 26	9.89	Jan. 25	10.86
Feb. 4	9.89	Aug. 24	9.87	Feb. 29	10.64
27	9.97	Sept. 30	10.09	Mar. 27	10.58
Apr. 1	10.43	Oct. 28	10.16	Apr. 26	10.62
28	10.71	Nov. 15	10.16	May 28	10.68
May 28	10.82	Dec. 23	10.43	June 28	10.99
June 26	10.66	1955		Oct. 3	10.18
		Jan. 25	10.41	Dec. 20	9.88

* S3531 has been replaced by S9130 which is located nearby.

S3533. City of New York, Board of Water Supply. South of Middle Country Rd., Middle Island. Lat. 40°52'04", long. 72°55'23". Driven observation well in deposits of late Pleistocene age, diameter 8 inches, depth 31.7 feet. Highest water level 50.00 feet above msl, June 8, 1908; lowest 44.87 feet above msl, Jan. 26, 1951. Records published, including this report: 1907-09, 1948-55.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1951		Dec. 27	45.94	Oct. 31	47.30
Jan. 26	44.87	1952		Nov. 26	47.08
Feb. 26	45.05	Jan. 30	45.83	Dec. 30	46.68
Apr. 4	46.33	Feb. 28	46.64	1953	
30	46.35	Mar. 26	47.32	Feb. 4	46.60
June 1	46.80	Apr. 28	47.83	Mar. 31	46.81
28	46.90	May 28	48.16	Apr. 28	48.09
July 26	46.73	June 4	48.56	May 28	49.29
Aug. 30	46.44	July 1	48.55	June 29	49.88
Oct. 1	46.14	29	[illegible]		49.61
31	45.79	Aug. 28	48.29		
Nov. 26	45.47	Oct. 1	47.78		
[illegible]	45.40				

S3536. City of New York, Board of Water Supply. Bernstein Blvd., Center Moriches. Lat. 40°49'39", long. 72°46'30". Driven observation well in deposits of late Pleistocene age, diameter 8 inches, depth 60.1 feet. Highest water level 88.63 feet above msl, June 5, 1908; lowest 83.75 feet above msl, Mar. 8, 1951. Records published, including this report: 1907-09, 1942-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1951		June 25	86.73	1954	
Jan. 23	85.00	July 23	87.06	Mar. 26	85.39
Mar. 8	83.75	Aug. 27	87.08	June 30	85.80
Apr. 4	84.05	Sept. 24	86.86	Sept. 30	85.99
May 1	84.60	Nov. 5	85.61	Oct. 28	85.66
31	84.80	Dec. 4	85.04	Dec. 30	86.66
June 28	84.80	30	85.76	1955	
July 26	84.80	1953		Mar. 23	87.38
Aug. 29	84.80	Mar. 31	89.44	June 21	87.25
Oct. 1	85.11	Apr. 30	88.60	Aug. 23	86.81
Nov. 1	85.70	May 28	87.91	Oct. 6	86.33
30	85.93	June 24	88.01	Dec. 28	86.79
Dec. 19	85.44	July 28	88.61	1956	
1952		Aug. 3	88.48	June 21	88.35
Jan. 29	85.61	26	88.85	Oct. 3	87.51
Feb. 27	86.01	Oct. 1	87.37	Dec. 20	86.39
Mar. 26	86.79	Nov. 4	86.99		
Apr. 25	87.30	Dec. 17	85.93		
May 27	86.38				

b. Records previously published are in error. Add 0.05 foot to convert previously published measurements to msl, Sandy Hook, N.J. datum.

S3538. City of New York, Board of Water Supply. Route 113 near intersection with Route 31, Flanders. Lat. 40°51'16", long. 72°37'18". Driven observation well in deposits of late Pleistocene age, diameter 8 inches, depth 39.4 feet. Highest water level 19.16 feet above msl, June 24, 1953; lowest 14.18 feet above msl, Jan. 23, 1951. Records published, including this report: 1908-09, 1942-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1951		May 29	17.07	1954	
Jan. 23	14.18	June 25	17.90	Mar. 26	17.36
Feb. 27	14.36	July 23	17.33	June 29	17.36
Mar. 28	14.60	Aug. 27	17.49	Sept. 30	17.84
Apr. 25	15.08	Sept. 25	17.31	Oct. 26	18.08
May 31	15.32	Nov. 6	17.17	Dec. 29	17.94
June 29	15.53	Dec. 2	16.91	1955	
July 26	15.31	29	16.70	Mar. 25	17.88
Aug. 29	15.36	1953		June 20	17.72
Oct. 1	15.51	Mar. 31	17.39	Aug. 25	17.84
Nov. 2	14.95	Apr. 30	18.38	Dec. 28	17.39
28	15.02	May 28	19.05	1956	
Dec. 21	15.02	June 24	19.16	June 21	18.51
1952		Aug. 5	18.88	Oct. 3	17.82
Jan. 25	15.42	25	18.71	Dec. 20	17.04
Feb. 29	15.87	Oct. 7	18.80		
Mar. 27	16.22	Nov. 9	17.73		
Apr. 23	16.57	20	17.61		
		Dec. 29	18.25		

S3540. City of New York, Board of Water Supply. Riverhead Rd., Speonk. Lat. 40°50'35", long. 72°42'00". Driven observation well in deposits of late Pleistocene age, diameter 8 inches, depth 35.8 feet. Highest water level 23.57 feet above msl, June 24, 1953; lowest 18.28 feet above msl, Mar. 2, 1951. Records published, including this report 1907-09, 1942-43, 1947-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1951		May 27	21.40	1954	
Jan. 23	18.45	June 25	21.57	Mar. 26	21.27
Mar. 2	18.28	July 23	21.76	June 30	21.86
28	18.39	Aug. 27	21.66	Sept. 30	21.60
Apr. 25	18.84	Sept. 24	21.36	Oct. 26	21.17
May 31	19.44	Nov. 7	20.95	Dec. 27	22.13
June 29	19.57	Dec. 4	20.60	1955	
July 26	19.48	29	20.46	Mar. 25	22.32
Aug. 29	19.35	1953		June 21	22.12
Oct. 1	19.17	Mar. 31	21.44	Aug. 23	21.55
Nov. 1	18.96	Apr. 30	22.65	Oct. 6	21.02
30	18.88	May 28	23.46	1956	
Dec. 21	18.86	June 24	23.57	June 21	22.80
1952		Aug. 5	23.11	Oct. 3	22.08
Jan. 25	19.05	25	22.83	Dec. 20	21.22
Feb. 27	20.09	Oct. 7	22.35		
Mar. 27	20.98	Nov. 9	21.67		
Apr. 23	21.02	20	21.55		
		Dec. 17	21.40		

S354[illegible]. City of New York, Board of Water Supply. Old Country Rd., Speonk. Lat. 40°49'43", long. 72°40'48". Driven observation well in deposits of late Pleistocene age, diameter 8 inches, depth 26.5 feet. Highest water level 15.45 feet above msl, May 26, 1953; lowest 10.78 feet above msl, Jan. 23, 1951. Records published, including this report 1907-09, 42-43, 47-55.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
1951		Mar. 27	13.43	Oct. 7	13.07
Jan. 23	10.78	Apr. 24	13.71	Nov. 6	12.66
Mar. 2	11.01	May 27	13.84	20	12.55
28	11.46	June 25	13.84	Dec. 21	12.98
Apr. 23	12.81	July 23	13.66	1954	
May 31	12.38	Aug. 27	13.38	Mar. 26	12.83
June 29	12.19	Sept. 26	13.01	June 29	13.57
July 26	12.04	Nov. 6	12.48	Sept. 30	13.54
Aug. 29	11.72	Dec. 4	12.83	Oct. 26	13.70
Oct. 1	11.39	29	13.09	Dec. 27	13.79
Nov. 2	11.13	1953		1955	
29	11.46	Mar. 31	13.90	Mar. 25	13.70
Dec. 21	11.51	Apr. 30	15.27		
1952		May 26	15.49		
Feb. 1	11.46	June 24	15.06		
Feb. 29	13.09	Aug. 3	14.21		
		25	13.83		

S3542. City of New York, Board of Water Supply. North of Old Country Rd. near L.I.R.R. crossing, Speonk. Lat. 40°50'45", long. 72°40'49". Driven observation well in deposits of late Pleistocene age, diameter 2 inches, depth 54.5 feet. Highest water level 23.97 feet above msl, June 24, 1953; lowest 17.57 feet above msl, Dec. 21, 1951. Records published, including this report 1907-09, 42-43, 47-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1951		Nov. 7	21.14	June 29	21.87
Jan. 23	Dry	Dec. 29	20.57	Sept. 30	21.90
Mar. 2	Dry	1953		Oct. 26	22.17
28	Dry	Mar. 31	20.91	Dec. 27	22.14
Apr. 25	Dry	Apr. 30	22.61	1955	
May 31	19.27	May 28	21.68	Mar. 25	22.51
June 29	19.62	June 24	21.97	June 21	22.30
July 26	19.31	Aug. 3	21.63	Aug. 23	21.71
Aug. 29	19.17	25	21.34	1956	
Oct. 1	19.02	Oct. 7	22.66	June 26	21.08
Nov. 2	18.77	Nov. 9	22.07	Oct. 3	22.31
29	17.53	20	21.87	Dec. 20	21.22
Dec. 21	17.57	Dec. 21	21.36		
1952		1954			
Mar. 27	20.74	Mar. 26	21.23		
Sept. 24	21.58				

S3541. City of New York, Board of Water Supply. Near L. I. R. R., Westhampton. Lat. 40°49'58", long. 72°38'10". Driven observation well in deposits of late Pleistocene age, diameter 8 inches, depth 39.4 feet. Highest water level 14.67 feet above msl, Apr. 30, 1953; lowest 10.15 feet above msl, Jan. 23, 1951. Records published, including this report 1907-09, 42-43, 47-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1951		Feb. 29	12.33	Apr. 30	14.67
Jan. 23	10.15	Mar. 27	12.44	May 28	14.65
Feb. 27	10.57	Apr. 23	12.87	Aug. 5	13.62
Mar. 28	11.13	May 27	13.15	25	13.18
Apr. 25	11.87	June 25	13.27	Oct. 6	12.47
May 31	11.92	July 23	13.00	Nov. 9	12.30
June 29	11.60	Aug. 27	13.05	20	12.16
July 26	11.46	Sept. 25	12.60	Dec. 21	13.36
Aug. 29	11.13	Nov. 6	12.05	1954	
Oct. 1	10.77	Dec. 2	11.78	Mar. 26	12.62
Nov. 1	10.59	29	11.66	June 29	12.76
28	11.01	1953		Oct. 25	13.47
Dec. 21	11.09	Mar. 31	13.56	Dec. 30	13.15
1952					
Jan. 25	11.46				

S3727. City of New York, Board of Water Supply. Church St., West Sayville. Lat. 40°46'15", long. 73°04'55". Driven observation well in deposits of late Pleistocene age, diameter 8 inches, depth 38.7 feet. Highest water level 34.48 feet above msl, May 25, 1953; lowest 29.21 feet above msl, Jan. 25, 1951. Records published, including this report 1943-56.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
1951		June 23	34.07	1954	
Jan. 25	29.21	July 22	33.03	Mar. 26	30.95
Feb. 21	29.65	Aug. 26	32.57	July 1	32.88
Mar. 27	30.80	Sept. 23	32.07	Sept. 29	32.31
Apr. 24	31.60	Nov. 4	31.31	Oct. 27	32.13
June 1	31.60	Dec. 3	30.91	Dec. 23	32.46
28	31.36	29	30.63	1955	
July 26	31.09	1953		Mar. 23	32.71
Aug. 28	30.68	Mar. 30	32.54	June 24	32.47
Sept. 25	30.27	Apr. 29	33.97	Aug. 24	32.07
Oct. 31	29.85	May 25	34.42	Sept. 28	31.90
Nov. 27	29.89	June 23	34.11	Dec. 27	33.74
Dec. 19	29.88	Aug. 4	33.33	1956	
1952		25	32.96	June 22	34.81
Jan. 24	30.70	Oct. 5	32.28		
Feb. 26	31.81	Nov. 2	31.69		
Mar. 25	32.25	30	31.31		
Apr. 22	32.70	Dec. 18	31.64		
May 26	33.11				

53731. City of New York, Board of Water Supply. Scherger Ave., Hagerman. Lat. 40°46'19", long. 72°57'30". Driven observation well in deposits of late Pleistocene age, diameter 2 inches, depth 44.3 feet. Highest water level 26.87 feet above msl, May 26, 1953; lowest 22.13 feet above msl, Jan. 25, 1951. Records published, including this report 1943-55.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1951		Mar. 25	25.72	Aug. 25	25.52
Jan. 25	22.13	Apr. 23	25.37	Oct. 6	24.65
Feb. 26	22.53	May 27	25.59	Nov. 9	24.03
Mar. 27	23.76	June 24	25.92	30	23.60
Apr. 24	24.32	July 22	25.70	Dec. 23	23.51
June 1	24.43	Aug. 27	25.19	1954	
29	24.18	Sept. 24	24.75	Mar. 26	23.25
July 26	24.02	Nov. 4	24.05	July 1	24.67
Aug. 28	23.64	Dec. 2	23.61	Sept. 29	24.85
Sept. 25	23.27	22	23.35	Oct. 27	24.80
Oct. 31	22.79	1953		Dec. 23	24.59
Nov. 27	22.54	Apr. 3	25.16	1955	
Dec. 19	22.37	28	26.27	Mar. 23	25.15
1952		May 26	26.87	June 21	25.13
Jan. 25	23.14	June 24	26.61		
Feb. 26	24.21	Aug. 5	25.80		

53732. City of New York, Board of Water Supply. Mt. Sinai Rd., Miller Place. Lat. 40°54'26", long. 72°59'15". Driven observation well in deposits of late Pleistocene age, diameter 2 inches, depth 76.4 feet. Highest water level 61.34 feet above msl, Oct. 6, 1953; lowest 51.55 feet above msl, Jan. 9, 1948. Records published, including this report 1943-56.

Water level above msl, Sandy Hook, N. J. datum

1951		May 27	54.87	1954	
Jan. 22	52.79	June 24	55.50	Mar. 22	57.79
Feb. 20	52.61	July 21	55.18	June 28	59.38
Mar. 28	53.61	Aug. 26	55.09	Sept. 27	56.33
Apr. 23	54.17	Sept. 22	54.88	Oct. 22	55.80
May 28	53.34	Nov. 3	54.65	Dec. 29	55.35
June 27	52.99	Dec. 1	54.87	1955	
July 24	53.84	29	54.43	Apr. 1	55.21
Aug. 28	52.64	1953		June 23	55.30
Sept. 25	52.47	Mar. 30	55.07	Aug. 23	59.16
Oct. 30	52.25	Apr. 28	56.08	Sept. 29	58.20
Nov. 26	52.27	May 25	55.82	1956	
Dec. 22	50.13	June 23	56.37	June 20	58.37
1952		Aug. 4	56.31	Oct. 4	57.89
Jan. 25	50.04	27	56.85	Dec. 18	57.27
Feb. 26	56.17	Oct. 6	61.34		
Mar. 25	55.13	26	60.64		
Apr. 23	54.46	Nov. 24	59.30		
		Dec. 23	58.84		

53736. U.S. Geol. Survey. Schmidt St., Holbrook. Lat. 40°47'58", long. 73°05'18". Driven observation well in deposits of late Pleistocene age, diameter 1¼ inches, depth 59.1 feet. Highest water level 48.67 feet above msl, Sept. 28, 1956; lowest 41.60 feet above msl, Feb. 21, 1951. Records published, including this report 1943-56.

Water level above msl, Sandy Hook, N.J. datum

1951		1953		1955	
Jan. 23	41.86	Feb. 2	44.45	Jan. 26	45.65
Feb. 21	41.60	25	43.62	Feb. 23	45.80
Mar. 27	42.33	Mar. 30	43.67	Mar. 23	45.80
Apr. 24	42.90	Apr. 28	45.17	Apr. 25	45.76
June 1	43.03	May 25	46.10	May 26	46.01
27	43.34	June 24	46.80	June 28	45.91
July 26	43.68	Aug. 4	46.97	July 26	45.68
Aug. 28	43.48	25	46.94	Aug. 29	45.51
Sept. 25	43.33	Oct. 5	46.96	Sept. 27	45.10
Oct. 31	43.34	30	46.41	Nov. 1	43.28
Nov. 27	43.04	Nov. 30	46.36	23	43.78
Dec. 17	43.18	Dec. 21	45.93	Dec. 27	46.60
1952		1954		1956	
Jan. 24	42.79	Jan. 25	45.36	Feb. 27	46.99
Feb. 26	42.06	Feb. 26	44.21	Mar. 27	46.71
Mar. 25	43.26	Mar. 29	44.30	Apr. 25	47.19
Apr. 22	43.90	Apr. 26	44.08	May 24	47.46
May 27	44.67	May 28	43.98	June 25	47.95
June 23	45.31	June 30	44.00	Sept. 28	48.67
July 28	45.45	July 28	44.98	Oct. 17	47.75
Aug. 26	45.83	Aug. 25	44.77		
Sept. 23	45.68	Sept. 29	45.13		
Nov. 4	45.41	Oct. 27	45.03		
Dec. 3	45.33	Nov. 22	45.35		
29	44.56	Dec. 23	45.45		

53466. C. Kotoski. South of Route 25, Mattituck. Lat. 40°58'05", long. 72°32'48". Drilled irrigation well in deposits of late Pleistocene age, diameter 5 inches, depth 48.5 feet. Highest water level 4.30 feet above msl, May 27, 1953; lowest 2.47 feet above msl, Oct. 5, 1950. Records published, including this report 1949-56.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
1949		July 3	3.04	1954	
Sept. 8	3.91	30	2.93	Apr. 27	3.48
Oct. 28	3.84	Oct. 1	2.51	May 26	3.61
Dec. 29	3.46	31	2.64	July 8	3.70
1950		Nov. 28	2.89	Sept. 28	3.95
May 11	3.78	Dec. 20	2.93	Oct. 28	3.90
25	3.63	1952		Dec. 28	3.93
June 28	3.51	Jan. 30	3.43	1955	
July 25	3.61	Feb. 28	3.94	Mar. 31	3.88
Aug. 30	3.51	Mar. 26	4.04	Aug. 24	3.06
Oct. 5	2.47	Apr. 24	3.76	Dec. 28	3.18
Nov. 8	3.50	May 28	3.48	1956	
29	3.77	July 23	3.65	Oct. 4	3.19
Dec. 28	3.61	Aug. 27	3.40	Dec. 26	3.11
1951		Sept. 24	3.37		
Jan. 30	3.66	Nov. 6	2.91		
Feb. 28	3.10	Dec. 23	2.90		
Mar. 29	3.26	1953			
Apr. 27	3.36	Apr. 1	4.07		
June 5	3.57	May 27	4.30		
		June 30	3.93		

54269. U. S. Geol. Survey. Reeves Ave., Riverhead. Lat. 40°57'06", long. 72°42'03". Drilled observation well in deposits of late Pleistocene age, diameter 1¼ inches, depth 65.1 feet. Highest water level 16.98 feet above msl, June 25, 1953; lowest 12.69 feet above msl, Oct. 31, 1950. Records published, including this report 1945-56.

Water level above msl, Sandy Hook, N. J. datum

1951		Dec. 3	15.14	Nov. 19	14.02
Jan. 30	12.86	27	15.08	Dec. 30	14.35
Feb. 28	13.77	1953		1955	
Mar. 30	13.36	Apr. 1	15.10	Jan. 24	16.18
Apr. 27	13.60	May 1	15.90	Feb. 24	16.60
June 5	13.86	28	16.72	Apr. 1	16.59
July 5	14.03	June 25	16.58	28	16.53
31	13.79	Aug. 4	16.37	May 26	16.33
Aug. 30	13.58	26	16.11	June 23	15.95
Sept. 26	13.65	Oct. 1	15.57	July 27	15.15
Nov. 1	13.32	28	15.37	Aug. 24	14.53
29	13.75	Nov. 25	15.15	Oct. 6	14.71
Dec. 20	13.80	Dec. 22	15.77	Nov. 3	14.56
1952		1954		25	15.03
Jan. 30	14.42	Jan. 26	15.41	1956	
Feb. 27	14.81	Feb. 24	15.26	Jan. 6	15.29
Mar. 26	15.23	Mar. 27	15.02	Feb. 29	15.86
Apr. 23	15.66	May 26	15.03	Mar. 30	15.95
May 28	16.11	June 29	14.80	Apr. 26	16.09
June 26	16.17	July 27	14.95	May 28	16.32
July 24	15.68	Aug. 24	14.36	June 21	16.28
Aug. 28	15.66	Sept. 23	15.50	Oct. 4	15.36
Sept. 25	15.60	Oct. 29	15.25	Dec. 26	14.89
Nov. 3	15.34				

54367. M. Boettinger. Florida Ave., Commack. Lat. 40°48'56", long. 73°16'35". Dug unused well in deposits of late Pleistocene age, diameter 30 inches, depth 123.9 feet. Highest water level 59.38[a] feet above msl, Aug. 27, 1953; lowest 51.55[a] feet above msl, Sept. 26, 1950. Records published, including this report: 1945-56.

Water level above msl, Sandy Hook, N. J. datum

1951		1952		1953	
Jan. 22	Dry	Jan. 24	Dry	Mar. 30	55.80
Feb. 20	Dry	Feb. 25	Dry	Apr. 28	55.47
Mar. 27	Dry	Mar. 25	51.60	May 25	55.89
Apr. 23	Dry	Apr. 22	Dry	June 23	57.06
May 28	Dry	May 28	Dry	Aug. 4	59.38
June 27	Dry	June 23	Dry	27	59.41
July 24	Dry	July 21	Dry	Oct. 6	58.81
Aug. 28	Dry	Aug. 25	Dry	Nov. 24	58.01
Sept. 25	Dry	Sept. 26	Dry	Dec. 23	58.85
Oct. 30	Dry	Nov. 3	51.55	1954	
Nov. 26	Dry	Dec. 1	56.52	Mar. 22	57.46
Dec. 17	Dry	29	55.52	Oct. 21	51.56

a. Records previously published are in error. Subtract 0.19 foot to convert previously published measurements to msl, Sandy Hook, N. J. datum.

54377. J. Zimmerman. Horizon Rd., St. James. Lat. 40°52'35", long. 73°08'25". Dug unused well in deposits of late Pleistocene age, diameter 36 inches, depth 67.8 feet. Highest water level 65.83 feet above msl, June 20, 1956; lowest 59.43 feet above msl, Jan. 22, 1951. Records published, including this report: 1945-56.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
1951		May 27	62.48	1954	
Jan. 22	59.43	June 24	62.60	Mar. 22	64.70
Feb. 20	59.63	July 21	62.79	June 28	64.68
Mar. 27	60.18	Aug. 26	62.80	Sept. 27	63.44
Apr. 23	60.66	Sept. 22	62.80	Oct. 22	63.64
May 28	61.41	Nov. 3	62.86	Dec. 29	63.90
June 27	61.39	Dec. 1	62.84	1955	
July 24	61.83	29	62.06	Mar. 31	64.10
Aug. 28	61.06	1953		June 24	63.61
Sept. 25	60.84	Mar. 30	64.36	Aug. 23	63.30
Oct. 30	60.56	Apr. 28	63.93	Sept. 29	63.85
Nov. 26	60.66	May 25	64.66	Dec. 28	65.40
Dec. 18	60.50	June 23	65.00	1956	
1952		Oct. 6	64.03	June 20	65.83
Jan. 25	60.80	26	63.88	Oct. 1	64.92
Feb. 26	61.21	Nov. 23	63.45	Dec. 18	64.05
Mar. 25	61.60	Dec. 23	63.60		
Apr. 23	62.10				

54523. U. S. Geol. Survey. Route 25 and Northville Turnpike, Riverhead. Lat. 40°56'07", long. 72°39'52". Driven observation well in deposits of late Pleistocene age, diameter 1¼ inches, depth 13.1 feet. Highest water level 10.52 feet above msl, May 1, 1953; lowest 8.00 feet above msl, Oct. 1, 1951. Records published, including this report 1945-56.

Water level above msl, Sandy Hook, N. J. datum

1951		May 28	9.97	1954	
Jan. 30	8.84	June 26	9.52	Mar. 23	9.55
Feb. 27	9.33	July 23	9.03	June 29	8.95
Mar. 29	9.26	Aug. 28	9.64	Sept. 23	10.33
Apr. 25	9.60	Sept. 24	9.37	Oct. 29	9.51
June 1	9.14	Nov. 6	9.00	Dec. 28	9.89
July 2	8.84	Dec. 3	9.06	1955	
31	8.63	27	9.16	Mar. 31	9.63
Aug. 29	8.39	1953		June 22	9.11
Oct. 1	8.00	Apr. 2	10.31	Aug. 24	8.50
31	8.36	May 1	10.52	Oct. 6	8.36
Nov. 28	9.06	27	10.08	Dec. 29	9.21
Dec. 20	9.77	June 25	9.62	1956	
1952		Aug. 4	9.95	June 21	9.33
Jan. 30	9.83	26	9.82	Oct. 4	8.81
Feb. 27	9.74	Oct. 8	8.56	Dec. 27	9.26
Mar. 26	9.95	28	8.81		
Apr. 23	9.72	Nov. 30	8.90		
		Dec. 22	9.76		

54529. J. Greenwick. Sound and Tooney Aves., Riverhead. Lat. 40°57'19", long. 72°45'04". Drilled unused well in deposits of late Pleistocene age, diameter 6 inches, depth 137.4 feet. Highest water level 13.79 feet above msl, Apr. 1, 1955; lowest 10.68 feet above msl, February 28, 1951. Records published including this report 1945-56.

Water level above msl, Sandy Hook, N. J. datum

1951		May 28	12.92	1954	
Jan. 24	10.97	June 27	12.83	Mar. 23	12.75
Feb. 28	10.68	July 23	12.62	June 29	12.23
Mar. 30	11.19	Aug. 28	12.91	Sept. 23	12.25
Apr. 27	11.25	Sept. 25	12.96	Dec. 30	13.54
June 5	11.54	Nov. 5	12.83	1955	
July 5	11.76	Dec. 3	12.79	Apr. 1	13.79
31	11.66	22	12.77	June 23	13.31
Aug. 31	11.56	1953		Aug. 23	12.32
Oct. 3	11.50	Apr. 1	12.61	Oct. 7	12.24
Nov. 1	11.57	May 1	12.99	1956	
29	11.57	28	13.17	June 6	12.99
1952		Aug. 3	13.04	21	13.61
Jan. 30	11.79	26	13.17	Oct. 4	13.10
Feb. 27	12.15	Oct. 8	12.96	Dec. 21	12.86
Mar. 26	12.27	Nov. 3	13.05		
Apr. 24	12.52	25	13.09		
		Dec. 22	12.97		

54676. T.T. Luce. Near Church La., Laurel. Lat. 40°58'40", long. 72°33'36". Drilled unused well in deposits of late Pleistocene age, diameter 6 inches, depth 91.1 feet. Highest water level 11.60 feet above msl, May 27, 1953; lowest 7.37 feet above msl, Jan. 30, 1951. Records published, including this report 1949-56.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
1949		Feb. 28	7.61	May 5	11.06
July 1	10.15	Mar. 29	7.84	June 23	11.60
Aug. 8	9.90	Apr. 25	8.29	Aug. 4	11.61
29	9.54	June 5	8.03	27	10.94
Oct. 3	9.69	July 3	8.99	Oct. 8	10.78
28	9.43	30	8.61	28	10.13
Dec. 5	9.01	Aug. 30	8.35	Nov. 30	9.89
30	8.95	Sept. 26	8.32	Dec. 28	9.48
1950		Nov. 8	8.70	1954	
Jan. 31	8.78	Dec. 20	8.69	Mar. 23	10.04
Feb. 28	8.64	1952		Aug. 25	9.05
Mar. 30	8.83	Jan. 31	9.06	Sept. 28	9.34
Apr. 26	8.13	Feb. 28	9.47	Dec. 30	10.75
May 23	8.06	Mar. 26	9.92	1955	
June 28	7.96	Apr. 25	10.46	Apr. 1	10.97
July 25	7.73	May 28	10.80	June 23	9.98
Aug. 30	7.61	June 26	10.68	Aug. 24	8.81
Oct. 5	7.80	July 23	10.18	1956	
31	7.55	Aug. 28	10.87	June 26	10.43
Nov. 1	7.39	Sept. 24	10.34	Oct. 4	9.90
29	7.47	Nov. 6	9.90	Dec. 27	9.51
Dec. 28	7.41	Dec. 3	9.79		
1951		23	9.66		
Jan. 30	7.37	1953			
		Apr. 1	9.94		

55615. A. Tyska. Bridgehampton. Lat. 40°57'21", long. 72°20'12". Drilled irrigation well in deposits of late Pleistocene age, diameter 12 inches, depth 160.0 feet. Highest water level 20.77[a] feet above msl, Jan. 25, 1955; lowest 15.74[a] feet above msl, Jan. 23, 1951. Records published, including this report: 1950-56.

Water level above msl, Sandy Hook, N.J. datum

1950		Apr. 24	16.82	Apr. 28	20.01
Oct. 3	15.78	May 28	17.00	May 27	19.91
31	16.10	Aug. 27	19.49	Aug. 24	19.50
Nov. 28	15.98	Sept. 24	17.79	Nov. 18	20.70
Dec. 26	15.86	Nov. 5	17.70	Dec. 27	20.64
1951		Dec. 8	17.67	1955	
Jan. 23	15.74	23	17.61	Jan. 25	20.77
Feb. 21	15.76	1953		Feb. 25	20.65
Mar. 26	15.76	Feb. 3	17.63	Apr. 25	20.61
Apr. 25	15.83	26	17.72	June 20	20.47
May 31	15.93	Apr. 1	17.90	July 26	19.38
July 2	15.98	29	18.33	Aug. 25	19.49
26	16.00	May 26	18.91	Nov. 2	19.47
Aug. 29	16.08	Aug. 3	19.60	25	19.51
Sept. 26	16.05	25	19.89	Dec. 28	19.42
Oct. 31	15.98	Oct. 7	19.93	1956	
Nov. 28	16.14	Nov. 5	19.77	Feb. 29	19.53
1952		Dec. 3	19.89	Mar. 26	19.99
Jan. 28	16.47	23	20.12	Apr. 27	19.81
Feb. 27	16.44	1954		May 28	20.11
Mar. 26	16.53	Feb. 25	20.27	Oct. 3	20.41
		Mar. 25	20.08	Dec. 21	19.87

a. Records previously published are in error. Add 0.04 foot to convert previously published measurements to msl, Sandy Hook, N.J. datum.

S6528. J. McCabe. Horton's La., Southold. Lat. 41°04'22", long. 72°26'20". Dug unused well in deposits of late Pleistocene age, diameter 36 inches, depth 45.4 feet. Highest water level 5.09 feet above msl, May 27, 1953; lowest 1.70 feet above msl, Apr. 24, 1950. Records published, including this report: 1949-56.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level
1949	
Aug. 9	3.05
24	2.92
Sept. 30	2.60
Oct. 27	2.48
Dec. 5	2.33
29	2.22
1950	
Feb. 1	2.03
27	1.90
Mar. 28	1.89
Apr. 24	1.70
May 26	1.88
June 27	2.75
July 25	2.10
Aug. 29	2.27
Oct. 4	2.34
Nov. 2	2.07
29	2.30
Dec. 28	2.60
1951	
Feb. 1	2.30
28	2.67
Mar. 29	3.09
Apr. 26	3.04
June 4	4.06
July 3	3.79
30	3.37
Aug. 30	3.09
Oct. 3	2.80
Nov. 1	2.70
29	2.93
Dec. 20	2.83
1952	
Jan. 31	3.01
Feb. 28	3.75
Mar. 27	4.36
Apr. 25	4.63
May 29	4.40
June 26	4.86
July 24	3.88
Aug. 28	4.04
Sept. 25	3.82
Nov. 6	3.89
Dec. 4	3.08
23	2.96
1953	
Apr. 2	2.76
May 4	3.47
27	5.09
June 26	3.82
Aug. 6	4.16
26	3.95
Oct. 8	3.10
29	2.90
Dec. 8	3.03
28	3.49
1954	
Mar. 24	3.49
July 1	3.90
Sept. 24	4.44
Oct. 28	4.35
Dec. 28	3.87
1955	
Mar. 31	3.89
June 22	3.48
Aug. 24	2.96
Oct. 7	2.80
Dec. 29	4.29
1956	
June 26	4.48
Sept. 26	3.10
Dec. 26	2.88

S6529. R. Mellig. Route 25, Southold. Lat. 41°03'40", long. 72°26'05". Driven unused well in deposits of late Pleistocene age, diameter 1¼ inches, depth 31.4 feet. Highest water level 4.50 feet above msl, May 27, 1953; lowest 1.68 feet above msl, Feb. 1, 1950. Records published, including this report 1949-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level
1949	
Aug. 8	2.18
25	2.40
Oct. 27	2.13
Dec. 29	1.82
1950	
Feb. 1	1.68
27	1.88
Apr. 25	1.89
May 24	1.96
June 27	2.04
July 25	2.08
Aug. 29	2.05
Oct. 4	2.04
Nov. 1	2.00
29	2.12
Dec. 28	2.13
1951	
Feb. 1	2.13
Feb. 28	2.59
Mar. 29	3.08
Apr. 26	3.51
June 4	3.74
July 3	3.04
30	2.71
Aug. 30	2.53
Oct. 2	2.33
Nov. 29	2.49
Dec. 20	2.41
1952	
Mar. 27	3.75
Apr. 25	3.40
May 29	3.65
Aug. 28	3.37
Sept. 25	3.08
1953	
May 4	4.49
27	4.50
Oct. 8	2.40
Nov. 4	2.51
Dec. 2	2.58
22	2.81
1954	
July 2	3.20
Sept. 23	3.05
Oct. 28	3.56
1955	
Mar. 31	3.37
June 22	3.18
1956	
June 26	3.43
Sept. 26	3.20
Dec. 26	2.85

S6530. Southold Fire Dept. Boisseau Ave., Southold. Lat. 41°05'04", long. 72°25'00". Drilled fire well in deposits of late Pleistocene age, diameter 6 inches, depth 61.1 feet. Highest water level 2.94 feet above msl, Feb. 28, 1952; lowest -0.08 foot above msl, Dec. 29, 1949. Records published, including this report 1949-56.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level
1949	
July 13	0.38
Aug. 6	1.81
24	1.40
Sept. 29	1.30
Oct. 25	0.60
Dec. 3	0.05
29	-.08
1950	
Feb. 4	1.88
27	.47
Mar. 28	.90
Apr. 25	.03
May 24	.77
June 27	1.35
July 25	1.10
Aug. 29	1.65
Oct. 4	1.12
Nov. 1	1.91
29	1.64
Dec. 28	1.96
1951	
Feb. 1	1.03
28	1.40
Mar. 29	1.09
Apr. 26	1.40
June 4	2.17
July 3	1.78
30	1.47
Aug. 30	1.88
Oct. 8	0.66
Nov. 1	0.98
29	0.71
Dec. 20	1.07
1952	
Jan. 31	1.10
Feb. 28	2.94
Mar. 27	1.40
Apr. 25	1.33
May 28	1.60
June 26	1.78
July 24	1.28
Aug. 28	1.84
Sept. 25	1.41
Nov. 6	0.16
Dec. 4	1.78
23	0.89
1953	
Apr. 2	1.95
May 4	2.30
27	2.31
June 26	1.30
Aug. 4	1.03
26	1.48
Oct. 8	1.08
29	1.74
Dec. 8	0.34
29	1.63
1954	
Mar. 24	1.44
Sept. 24	0.39
Oct. 28	0.16
Dec. 28	0.38
1955	
Mar. 31	.99
June 22	1.96
Aug. 24	1.43
Oct. 7	1.31
Dec. 29	0.36
1956	
June 26	1.78
Sept. 26	0.33
Dec. 26	1.08

S6537. Cutchogue Fire Dept. Oak La. and Route 25, Cutchogue. Lat. 41°01'18", long. 72°28'36". Drilled fire well in deposits of late Pleistocene age, diameter 6 inches, depth 44.4 feet. Highest water level 4.64 feet above msl, May 1, 1953; lowest 1.70 feet above msl, Oct. 8, 1953. Records published, including this report 1949-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level
1949	
July 14	2.82
Aug. 4	2.94
24	2.63
1950	
Apr. 11	2.37
May 24	2.44
June 26	2.17
July 25	2.14
Aug. 29	2.06
Oct. 4	1.98
Nov. 1	1.98
29	2.43
Dec. 28	2.28
1951	
Feb. 1	2.54
28	2.93
Mar. 29	3.01
Apr. 26	3.24
June 4	3.17
July 3	2.95
30	2.66
Aug. 30	2.52
Oct. 2	2.36
Nov. 1	2.56
28	2.65
Dec. 20	2.77
1952	
Jan. 31	3.58
Feb. 28	3.71
Mar. 26	4.02
Apr. 25	3.73
May 28	3.61
June 26	3.63
July 24	3.14
Aug. 28	3.71
Sept. 25	3.44
Nov. 6	3.06
Dec. 4	3.01
22	3.01
1953	
Apr. 2	4.34
May 1	4.64
27	4.36
June 26	3.66
Aug. 4	3.86
Aug. 26	3.14
Oct. 8	1.70
Nov. 4	2.89
25	3.64
Dec. 22	4.03
1954	
Mar. 24	3.50
July 3	2.86
Sept. 24	4.01
Oct. 28	3.51
Dec. 28	3.75
1955	
Mar. 31	3.55
June 22	2.91
Aug. 24	2.77
Oct. 7	2.18
Dec. 29	3.30
1956	
June 26	3.59
Sept. 27	2.98
Dec. 26	3.20

S6540. Cutchogue Fire Dept. Alvah's La., Cutchogue. Lat. 41°00'28", long. 72°29'43". Drilled fire well in deposits of late Pleistocene age, diameter 6 inches, depth 48.4 feet. Highest water level 7.53 feet above msl, May 27, 1953; lowest 3.21 feet above msl, Nov. 29, 1950. Records published, including this report 1949-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level
1949	
July 14	4.08
Aug. 5	4.04
24	4.44
1950	
Apr. 11	3.85
Aug. 25	3.44
Oct. 4	3.77
Nov. 2	3.22
29	3.21
Dec. 28	3.43
1951	
Feb. 1	3.62
28	4.19
Mar. 29	4.65
Apr. 27	5.23
June 4	5.25
July 3	4.97
30	4.49
Aug. 30	4.26
Oct. 2	3.76
31	3.81
Nov. 30	4.28
Dec. 20	3.96
1952	
Jan. 31	5.13
Feb. 28	5.93
Mar. 27	6.95
Apr. 25	6.51
May 28	6.58
June 26	6.13
July 24	5.17
Aug. 28	5.95
Sept. 25	5.46
Nov. 6	5.15
Dec. 4	4.90
22	4.77
1953	
Apr. 2	6.34
May 1	7.45
27	7.53
June 26	6.50
Aug. 4	5.75
26	5.52
Oct. 8	4.85
29	4.90
Nov. 25	4.97
Dec. 22	6.04
1954	
Mar. 24	5.10
July 1	5.00
Sept. 24	5.90
Oct. 28	5.76
Dec. 28	6.18
1955	
Mar. 31	6.03
June 22	4.75
Aug. 24	4.33
Oct. 6	4.08
Dec. 29	5.56
1956	
June 26	6.32
Sept. 27	5.11
Dec. 27	5.11

S6544. Cutchogue Fire Dept. New Suffolk La., Cutchogue. Lat. 40°59'52", long. 72°28'36". Drilled fire well in deposits of late Pleistocene age, diameter 6 inches, depth 41.6 feet. Highest water level 2.13 feet above msl, Apr. 2, 1953; lowest 0.38 foot above msl, Aug. 30, 1950. Records published, including this report 1949-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level
1949	
July 14	0.44
Aug. 24	.57
Sept. 30	.54
Oct. 27	.65
Dec. 5	.60
29	.39
1950	
Jan. 31	.44
Feb. 28	.97
Mar. 28	.78
Apr. 24	.44
May 23	.60
June 26	.56
July 25	.43
Aug. 30	.38
Oct. 4	.41
Nov. 2	.58
29	.85
Dec. 28	1.73
1951	
Feb. 1	.90
28	1.36
Mar. 29	1.19
Apr. 26	1.06
June 4	1.03
July 3	.44
30	.62
Aug. 30	.52
Oct. 2	.51
31	.40
Nov. 28	.80
Dec. 20	.82
1952	
Jan. 31	1.46
Feb. 28	1.21
Mar. 26	1.46
Apr. 24	.84
May 28	1.28
June 26	.84
July 24	.61
Aug. 28	1.14
Sept. 25	.78
Nov. 6	.52
Dec. 4	.42
22	.91
1953	
Apr. 2	2.13
May 1	1.51
27	1.28
June 26	0.73
Aug. 4	.52
26	.61
Oct. 8	.51
Nov. 4	.93
25	1.36
Dec. 22	1.59
1954	
Mar. 24	1.07
July 2	.71
Sept. 24	1.45
Oct. 28	.79
Dec. 28	1.08
1955	
Mar. 31	.76
June 22	.57
Aug. 24	.81
Oct. 6	.57
Dec. 29	.51
1956	
June 26	.69
Sept. 27	.54
Dec. 27	.94

S6543. Cutchogue Fire Dept. New Suffolk La., Cutchogue. Lat. 41°00'19", long. 72°28'58". Driven fire well in deposits of late Pleistocene age, diameter 6 inches, depth 45.6 feet. Highest water level 3.81 feet above msl, May 1, 1953; lowest 1.33 feet above msl, Nov. 2, 1950. Records published, including this report 1949-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level
1949	
July 14	1.95
Aug. 5	2.10
24	1.90
Sept. 30	1.76
Oct. 27	1.66
Dec. 5	1.78
29	1.63
1950	
Jan. 31	1.36
Feb. 28	1.74
Mar. 28	1.75
Apr. 24	1.62
May 23	1.65
June 26	1.56
July 25	1.47
Aug. 30	1.39
Oct. 4	1.35
Nov. 2	1.33
29	1.38
Dec. 28	1.56
1951	
Feb. 1	1.82
28	2.27
Mar. 29	2.36
Apr. 26	2.51
June 4	2.30
July 3	2.19
30	1.91
Aug. 30	1.68
Oct. 2	1.57
31	1.60
Nov. 28	1.87
Dec. 20	2.01
1952	
Jan. 31	2.81
Feb. 28	2.86
Mar. 26	3.26
Apr. 25	2.82
May 28	2.95
June 26	2.61
July 24	2.30
Aug. 28	2.00
Sept. 24	2.40
Nov. 6	2.06
Dec. 4	2.10
22	2.10
1953	
Apr. 2	3.71
May 1	3.81
27	3.38
June 26	2.88
Aug. 4	2.38
26	2.22
Oct. 8	2.00
Nov. 4	2.15
25	2.18
Dec. 22	2.99
1954	
Mar. 24	2.66
July 2	2.19
Sept. 24	3.10
Oct. 28	2.54
Dec. 28	2.84
1955	
Mar. 31	2.58
June 22	2.15
Aug. 24	2.00
Oct. 6	1.71
Dec. 29	2.36
1956	
June 26	2.67
Sept. 27	2.15
Dec. 27	2.32

S6555. A. Krupski. Oregon Rd. and Depot La., Cutchogue. Lat. 41°01'40", long. 72°30'55". Dug unused well in deposits of late Pleistocene age, diameter 36 inches, depth 62.8 feet. Highest water level 5.63 feet above msl, Dec. 28, 1954; lowest 2.12 feet above msl, Mar. 28, 1950. Records published, including this report 1949-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level
1949	
Sept. 7	4.30
29	4.11
Oct. 27	3.88
Dec. 5	3.68
29	3.66
1950	
Feb. 27	2.72
Mar. 28	2.12
May 23	Dry
June 27	Dry
July 25	Dry
Aug. 29	Dry
Oct. 4	Dry
Nov. 2	Dry
29	Dry
Dec. 28	Dry
1951	
Feb. 1	Dry
28	3.51
Mar. 29	3.26
Apr. 26	3.63
June 4	4.19
July 5	4.32
July 30	3.83
Aug. 30	3.88
Oct. 3	3.72
Nov. 1	3.77
29	2.72
Dec. 20	3.95
1952	
Jan. 31	Dry
Feb. 28	4.47
Mar. 27	4.36
Apr. 25	5.08
May 28	5.00
June 26	4.93
July 24	4.53
Aug. 28	4.79
Sept. 25	4.63
Nov. 6	4.56
Dec. 4	4.18
22	3.93
1953	
Apr. 2	3.56
May 1	4.60
27	5.48
June 26	5.38
Aug. 4	4.73
Aug. 26	4.49
Oct. 8	3.97
Nov. 25	4.26
Dec. 22	4.66
1954	
Mar. 24	4.64
July 1	3.78
Sept. 24	4.82
Oct. 28	5.09
Dec. 28	5.63
1955	
Mar. 31	5.23
June 22	4.56
Aug. 24	3.09
Oct. 7	3.04
Dec. 29	4.26
1956	
June 25	4.09
Sept. 27	4.59
Dec. 27	4.47

S6560. Mattituck Fire Dept. Cox Neck Rd., Mattituck. Lat. 40°59'10", long. 72°33'57". Drilled fire well in deposits of late Pleistocene age, diameter 6 inches, depth 30.4 feet. Highest water level 8.23 feet above msl, May 27, 1953; lowest 4.27 feet above msl, Nov. 8, 1950. Records published, including this report 1949-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1949		Apr. 27	5.75	June 26	7.57
		June 4	5.97	Aug. 4	6.41
July 14	6.71	July 5	5.70	26	6.14
Aug. 4	5.98	30	5.30	Oct. 8	5.77
Sept. 1	5.99	Aug. 30	5.13	28	5.59
30	5.62	Oct. 3	4.86	Nov. 25	5.71
Oct. 28	5.30	Nov. 1	4.96	Dec. 29	6.30
Dec. 5	5.09	29	5.12		
29	4.93	Dec. 30	5.38	1954	
1950		1952		Mar. 23	6.79
				July 1	5.74
Jan. 31	4.66	Jan. 31	5.86	Sept. 23	6.06
Feb. 28	4.76	Feb. 28	6.41	Oct. 29	6.42
Mar. 27	4.66	Mar. 27	6.73	Dec. 30	6.06
Apr. 24	4.76	Apr. 24	7.04		
May 23	4.74	May 28	7.23	1955	
June 26	4.75	June 26	6.81		
July 25	4.54	July 24	6.30	Apr. 1	6.46
Aug. 30	4.58	Aug. 28	6.17	June 23	5.85
Oct. 5	4.31	Sept. 24	6.14	Aug. 24	5.06
Nov. 8	4.27	Nov. 6	5.80	Oct. 7	4.93
29	4.29	Dec. 4	5.66		
Dec. 28	4.34	23	5.53	1956	
1951		1953		Jan. 26	6.41
				June 26	7.63
Jan. 30	4.44	Apr. 1	6.52	Sept. 27	6.18
Feb. 28	4.85	May 1	7.85	Dec. 27	6.50
Mar. 29	5.17	27	8.23		

S6466. Mattituck Fire Dept. Peconic Bay Blvd., Mattituck. Lat. 40°59'58", long. 72°30'39". Drilled fire well in deposits of late Pleistocene age, diameter 6 inches, depth 33.0 feet. Highest water level 8.84 feet above msl, Apr. 1, 1953; lowest 1.30 feet above msl, Dec. 30, 1949. Records published, including this report: 1949-56.

Water level above msl, Sandy Hook, N. J. datum

1949		Mar. 29	1.81	May 1	8.71
		Apr. 27	1.86	June 2	8.65
July 26	1.80	June 4	1.99	July 1	[illegible]
Aug. 4	2.46	July 3	1.98	30	1.96
Sept. 1	2.05	30	1.90	Aug. 30	1.98
30	1.85	Aug. 30	1.89	Nov. 6	[illegible]
Oct. 28	1.67	Oct. 3	1.85	Dec. 4	[illegible]
Dec. 5	1.58	Nov. 1	1.81		
30	1.30	29	1.73	1954	
		Dec. 30	1.82		
1950				Mar. 24	1.90
		1952		July 2	1.89
Jan. 31	1.68			Sept. 24	1.33
Feb. 28	1.65	Jan. 31	2.00	Oct. 28	1.88
Mar. 27	1.60	Feb. 28	2.50	Dec. 28	1.94
Apr. 24	1.78	Mar. 27	2.36		
May 23	1.78	Apr. 24	3.08	1955	
June 26	1.84	May 28	2.20		
July 25	1.79	June 26	2.44	Mar. 31	8.18
Aug. 30	1.73	July 25	2.16	June 23	8.11
Oct. 5	1.78	Aug. 28	1.90	Aug. 24	8.07
Nov. 8	1.62	Sept. 24	1.90	Oct. 6	8.07
29	2.35	Oct. 6	1.94	Dec. 29	1.07
Dec. 28	1.69	Nov. 4	1.58		
		23	1.53	1956	
1951					
		1953		June 26	8.83
Jan. 30	1.51			Sept. 27	8.87
Feb. 28	1.98	Apr. 1	8.84	Dec. 27	8.09

S7201. C. King. Route 25 near Orient Pt., Orient. Lat. 41°09'17", long. 72°14'44". Dug unused well in deposits of late Pleistocene age, diameter 30 inches, depth 22.3 feet. Highest water level 2.92 feet above msl, Apr. 2, 1953; lowest 0.19 feet above msl, June 26, 1952. Records published, including this report 1948-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1948		1951		May 27	1.80
				June 26	.44
Sept. 30	0.70	Feb. 1	1.67	Aug. 4	.11
Dec. 30	1.34	28	1.44	26	.09
		Mar. 29	1.54	Oct. 8	.41
1949		Apr. 26	1.32	Nov. 3	1.67
		June 4	1.30	Dec. 2	2.51
Feb. 1	2.05	July 3	1.01	23	2.38
22	1.86	30	.62		
Apr. 1	1.37	Aug. 30	.95	1954	
May 24	1.08	Oct. 3	.44		
July 1	.33	Nov. 1	1.14	Mar. 24	1.37
29	.40	29	1.12	July 2	.53
Sept. 1	1.07	Dec. 30	1.34	Sept. 24	1.40
28	.59			Oct. 28	1.84
Oct. 25	.59	1952		Dec. 28	1.44
Dec. 5	.92				
29	.44	Jan. 31	2.02	1955	
		Feb. 28	1.60		
1950		Mar. 27	2.01	Mar. 31	1.31
		Apr. 25	1.05	June 23	.43
Feb. 1	.44	May 29	1.48	Aug. 24	1.84
27	1.11	June 26	.19	Oct. 7	1.76
Mar. 30	1.05	July 25	.18	Dec. 29	.44
Apr. 25	.87	Aug. 28	1.20		
May 24	.86	Sept. 25	.83	1956	
June 27	.82	Nov. 6	.59		
July 25	.58	Dec. 4	1.02	June 26	.79
Aug. 29	.56	23	1.86	Sept. 26	.82
Oct. 4	.52			Dec. 26	1.49
Nov. 1	.48	1953			
28	1.93				
Dec. 28	.80	Apr. 2	2.92		
		May 5	2.08		

S7184. E. Petty, Orchard St., Orient. Lat. 41°08'30", long. 72°18'03". Dug unused well in deposits of late Pleistocene age, diameter 30 inches, depth 26.1 feet. Highest water level 3.55 feet above msl, Apr. 2, May 4, 1953; lowest 1.09 feet above msl, Dec. 29, 1949, Feb. 1, 1950. Records published, including this report 1948-56.

Water level above msl, Sandy Hook, N. J. datum

1949		1951		1953	
Jan. 31	2.71	Feb. 1	1.63	Apr. 2	3.55
Feb. 1	2.77	Feb. 28	2.25	May 4	3.55
Mar. 28	2.51	Mar. 29	2.22	May 27	3.10
Apr. 1	2.37	Apr. 26	2.57	June 26	3.11
Apr. 26	2.31	June 4	2.30	Aug. 4	1.80
June 2	2.09	July 3	2.12	Aug. 26	1.96
July 1	1.58	July 30	1.76	Oct. 8	1.69
July 25	1.50	Aug. 30	1.58	Nov. 3	1.83
Sept. 2	1.50	Oct. 3	1.44	Dec. 2	2.53
Sept. 29	1.37	Nov. 1	1.50	Dec. 23	3.13
Oct. 25	1.45	Nov. 29	1.64		
Dec. 5	1.40	Dec. 30	1.81	1954	
Dec. 29	1.09				
		1952		Mar. 24	2.18
1950				July 1	1.74
		Jan. 31	2.56	Sept. 24	1.39
Feb. 1	1.09	Feb. 28	2.77	Oct. 28	2.39
Feb. 27	1.44	Mar. 27	2.98	Dec. 28	2.14
Mar. 28	1.59	Apr. 25	3.45		
Apr. 25	1.79	May 28	3.54	1955	
May 24	1.61	June 26	3.24		
June 27	1.85	July 24	1.83	Mar. 31	2.65
July 25	1.46	Aug. 28	1.80	June 23	1.79
Aug. 29	1.55	Sept. 25	1.60	Aug. 24	1.24
Oct. 3	1.64	Nov. 6	1.66	Oct. 7	1.96
Nov. 1	1.44	Dec. 4	1.51	Dec. 29	2.80
Dec. 29	1.66	Dec. 23	1.41		
Dec. 28	1.65			1956	
				June 26	2.07
				Sept. 26	1.69
				Dec. 26	1.94

S7499. R. Hemmafake, Cook La., Bridgehampton. Lat. 40°56'20", long. 72°20'35". Drilled irrigation well in deposits of late Pleistocene age, diameter 12 inches, depth 103.0 feet. Highest water level 18.79 feet above msl, Oct. 25, 1954; lowest 13.40 feet above msl, May 31, 1951. Records published including this report 1950-1956.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
1950		1952		1954	
Aug. 16	14.62	Jan. 28	14.15	Mar. 25	18.14
Sept. 1	14.29	Feb. 27	15.40	July 8	17.15
Oct. 31	14.35	Mar. 26	15.48	Oct. 25	18.79
Nov. 28	14.14	Apr. 24	15.95	Dec. 27	18.07
Dec. 26	13.99	May 28	16.38		
		June 25	16.34	1955	
1951		July 22	16.36		
		Aug. 27	15.93	Mar. 25	18.62
Jan. 23	13.92	Sept. 24	15.76	Aug. 25	17.84
Feb. 27	13.87	Nov. 5	15.94	Oct. 6	17.08
Mar. 28	14.30	Dec. 2	15.36	Dec. 28	17.53
Apr. 25	14.55	Dec. 23	15.63		
May 31	13.40			1956	
June 29	14.05	1953			
July 27	14.24			June 21	17.79
Aug. 29	14.76	Apr. 1	16.91	Oct. 3	17.03
Sept. 26	13.91	Apr. 29	17.63	Dec. 21	16.81
Oct. 31	13.93	May 26	18.65		
Nov. 28	14.56	Aug. 25	18.00		
Dec. 19	13.96	Oct. 7	17.53		
		Nov. 5	17.65		
		Dec. 3	17.86		

S8033. U. S. Geological Survey, Sand location 1.2 mi. east of Sag Harbor Rd. and 1.6 mi. north of Route 27, Bridgehampton. Lat. 40°57'55", Long. 72°17'35". Driven observation well in deposits of late Pleistocene age, diameter 2 inches, depth 13.2 feet. Highest water level 18.30 feet above msl, May 26, 1953; lowest 13.37 feet above msl, Jan. 23, 1951. Records published, including this report 1950-1956.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
1950		Apr. 24	15.61	1954	
		May 28	16.26		
Oct. 3	13.79	June 25	16.86	Mar. 25	17.70
Oct. 30	13.74	July 23	15.96	July 8	17.43
Nov. 28	13.51	Aug. 27	16.45	Oct. 25	17.75
Dec. 26	13.79	Sept. 24	16.02	Dec. 27	17.74
		Nov. 5	15.64		
1951		Dec. 8	15.62	1955	
		Dec. 23	15.40		
Jan. 23	13.37			Mar. 25	17.82
Feb. 27	13.70	1953		June 20	17.80
Mar. 28	13.93			Aug. 29	16.55
Apr. 25	14.38	Apr. 1	18.23	Dec. 28	16.74
May 31	14.83	Apr. 29	18.05		
July 2	14.05	May 26	18.30	1956	
July 27	14.59	June 25	18.10		
Aug. 29	14.37	Aug. 3	17.84	June 21	17.06
Sept. 26	14.08	Aug. 25	17.64	Oct. 3	16.97
Oct. 31	13.88	Oct. 7	16.95	Dec. 21	16.38
Nov. 28	14.03	Nov. 5	16.89		
Dec. 19	14.05	Dec. 3	17.14		
		Dec. 23	17.97		
1952					
Jan. 28	14.61				
Feb. 27	14.90				
Mar. 26	15.44				

S8032. U. S. Geological Survey, North Sea Rd., Southampton. Lat. 40°54'16", long. 72°24'21". Driven observation well in deposits of late Pleistocene age, diameter 2 inches, depth 43.0 feet. Highest water level 11.25 feet above msl, May 26, 1953; lowest 6.68 feet above msl, Jan. 23, 1951. Records published including this report 1950-1956.

Water level above msl, Sandy Hook, N. J. datum

1950		Jul. 23	8.92	Oct. 25	9.33
		Aug. 27	8.89	Nov. 18	9.21
Aug. 18	7.27	Sept. 24	8.72	Dec. 27	9.40
Aug. 31	7.18	Nov. 5	8.34		
Oct. 3	7.03	Dec. 2	8.06	1955	
Oct. 31	6.86	Dec. 23	7.92		
Nov. 28	6.78			Jan. 25	9.57
Dec. 26	6.69	1953		Feb. 23	9.53
				Mar. 25	9.29
1951		Feb. 26	8.33	Apr. 25	9.36
		Apr. 1	9.22	May 25	9.11
Jan. 23	6.68	Apr. 29	10.54	June 30	9.01
Feb. 27	6.83	May 26	11.25	July 26	8.53
Mar. 28	7.21	June 25	10.82	Aug. 25	8.75
Apr. 25	7.71	Aug. 3	9.97	Oct. 6	7.89
May 31	8.09	Aug. 25	9.55	Nov. 2	7.11
June 29	8.29	Oct. 7	8.74	Nov. 25	8.59
July 26	8.05	Nov. 4	8.39	Dec. 28	8.80
Aug. 29	7.82	Dec. 2	8.46		
Sept. 26	7.57	Dec. 23	9.00	1956	
Oct. 31	7.38				
Nov. 27	7.37	1954		Jan. 26	8.70
Dec. 19	7.30			Feb. 29	8.86
		Jan. 27	9.50	Mar. 28	9.20
1952		Feb. 25	9.25	Apr. 27	10.02
		Mar. 25	9.08	May 28	10.33
Jan. 28	7.87	Apr. 28	9.17	June 21	10.09
Feb. 27	8.35	May 26	9.24	July 30	9.61
Mar. 26	8.80	July 2	8.97	Aug. 29	9.18
Apr. 24	9.22	July 27	8.68	Oct. 3	8.72
May 28	9.40	Aug. 29	8.36	Oct. 31	8.42
June 25	9.33	Oct. 1	9.20	Nov. 28	8.13
				Dec. 20	7.92

S8036. Bridgehampton Fire Dept. Route 27, Bridgehampton. Lat. 40°56'20", long. 72°16'40". Driven fire well in deposits of late Pleistocene age, diameter 6 inches, depth 46.4 feet. Highest water level 13.12 feet above msl, May 26, 1953; lowest 9.43 feet above msl, December 26, 1950. Records published, including this report 1950-1956.

Water level above msl, Sandy Hook, N.J. datum

1950		1952		Oct. 7	11.95
				Nov. 5	11.59
July 31	9.73	Jan. 28	10.72	Dec. 3	12.25
Sept. 1	9.73	Feb. 27	10.91	Dec. 23	12.67
Oct. 5	9.64	Mar. 26	11.21		
Oct. 30	9.58	Apr. 24	11.18	1954	
Nov. 28	9.60	May 28	11.55		
Dec. 26	9.43	June 25	11.27	Mar. 25	12.22
		July 23	11.03	Jul. 2	11.54
1951		Aug. 27	11.53	Oct. 1	12.04
		Sept. 24	11.05	Oct. 25	11.00
Jan. 23	9.57	Nov. 5	10.68	Dec. 27	12.10
Feb. 27	10.09	Dec. 2	10.49		
Mar. 27	10.10	Dec. 23	10.55	1955	
Apr. 25	10.26				
May 31	10.49	1953		Mar. 25	12.24
July 2	10.35			June 20	11.42
July 27	10.20	Apr. 1	12.27	Aug. 25	11.20
Aug. 29	10.07	Apr. 29	12.86	Oct. 6	10.74
Sept. 26	9.90	May 26	13.12	Dec. 28	11.46
Oct. 31	9.80	June 25	12.72		
Nov. 28	10.14	Aug. 3	11.91	1956	
Dec. 19	10.10	Aug. 25	12.23		
				June 21	12.44
				Oct. 3	11.34
				Dec. 20	11.02

S8041. C. Swenck, Ranse Path, Hardscrabble. Lat. 40°58'19" long. 72°13'19". Dug unused well in deposits of late Pleistocene age, diameter 36 inches, depth 39.7 feet. Highest water level 14.70 feet above msl, June 25, 1953; lowest 9.81 feet above msl, March 28, 1951. Records published, including this report 1950-1956.

Water level above msl, Sandy Hook, N.J. datum

1950		1952		Oct. 7	13.43
				Dec. 3	13.45
Aug. 2	10.55	Jan. 28	11.29		
Aug. 8	10.48	Feb. 27	11.15	1954	
Oct. 3	10.30	Mar. 26	11.53		
Oct. 30	10.29	Apr. 24	11.96	Mar. 25	14.00
Nov. 28	10.00	May 28	12.33	Nov. 1	13.77
Dec. 26	[illegible]	June 25	12.60	Dec. 27	13.45
		July 22	12.60		
1951		Aug. 27	12.58	1955	
		Sept. 24	12.28		
Feb. 27	11.08	Nov. 5	11.87	Mar. 25	13.71
Mar. 28	9.81	Dec. 2	11.59	June 20	13.60
Apr. 25	10.23	Dec. 23	11.39	Aug. 25	12.98
May 31	10.64			Oct. 6	12.10
July 2	10.98	1953		Dec. 28	12.59
July 27	11.03				
Aug. 29	10.92	Apr. 1	12.50	1956	
Sept. 26	10.63	Apr. 29	13.50		
Oct. 31	11.25	May 26	14.46	June 21	14.51
Nov. 28	11.72	June 25	14.70	Oct. 3	13.11
Dec. 19	10.57	Aug. 3	14.30	Dec. 20	12.63
		Aug. 25	14.11		

Table 8. (Continued)

S8442. W. Shebach, Sag Harbor Rd., Bridgehampton. Lat. 40°57'09", long. 72°17'57". Dug unused well in deposits of late Pleistocene age, diameter 36 inches, depth 25.2 feet. Highest water level 20.14 feet above msl, May 26, 1953; lowest 13.94 feet above msl, October 30, 1950. Records published, including this report 1950-1956.

Water level above msl, Sandy Hook, N.J. datum

Date	Water level	Date	Water level	Date	Water level
1950		1952		Oct. 7	17.38
July 31	15.12	Jan. 28	15.81	Nov. 5	17.37
Sept. 1	14.44	Feb. 27	16.55	Dec. 3	18.46
Oct. 5	14.76	Mar. 28	17.08	Dec. 23	20.03
Oct. 30	13.94	Apr. 24	17.15	1954	
1951		May 28	17.63	Mar. 25	19.20
Jan. 23	Dry	June 25	17.46	July 2	18.20
Feb. 27	15.06	July 23	16.73	Nov. 1	18.30
Mar. 28	15.20	Aug. 27	17.42	Dec. 27	19.38
Apr. 25	15.36	Sept. 24	16.85	1955	
May 31	15.91	Nov. 5	16.11	Mar. 25	19.12
July 2	15.79	Dec. 8	15.82	June 20	17.95
July 27	15.27	Dec. 23	15.99	Aug. 25	16.99
Aug. 29	14.76	1953		Oct. 6	16.32
Sept. 26	14.35	Apr. 1	18.95	Dec. 28	17.99
Oct. 31	13.99	Apr. 29	20.12	1956	
Nov. 28	14.44	May 26	20.14	June 21	19.42
Dec. 19	15.44	June 25	19.25	Oct. 3	17.55
		Aug. 3	18.80	Dec. 21	17.15
		Aug. 25	18.17		

S8844. Sag Harbor Fire Dept. Route 114 and Jermain Ave., Sag Harbor. Lat. 40°59'47", long. 72°17'13". Drilled fire well in deposits of late Pleistocene age, diameter 6 inches, depth 64.5 feet. Highest water level 7.42 feet above msl, June 21, 1956; lowest 4.43 feet above msl, Dec. 26, 1950. Records published, including this report 1950-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1950		1952		Nov. 5	5.58
Aug. 4	5.00	Jan. 28	5.40	Dec. 3	6.19
Sept. 1	4.75	Feb. 27	5.41	23	6.06
Oct. 5	4.57	Mar. 26	6.07	1954	
30	4.90	Apr. 24	5.83	Mar. 25	4.79
Nov. 28	4.63	May 28	6.23	July 2	5.97
Dec. 26	4.43	June 25	6.14	Oct. 1	6.43
1951		July 23	5.99	25	6.11
Jan. 23	4.45	Aug. 27	6.36	Dec. 27	6.43
Feb. 27	5.06	Sept. 24	5.84	1955	
Mar. 28	5.14	Nov. 5	5.34	Mar. 25	4.96
Apr. 25	5.40	Dec. 8	5.76	June 20	5.00
May 31	5.73	23	5.43	Aug. 25	5.60
July 2	5.90	1953		Oct. 6	5.21
27	5.17	Apr. 1	7.00	Dec. 28	5.63
Aug. 29	4.90	29	7.33	1956	
Sept. 26	4.76	May 26	7.18	June 21	7.42
Oct. 31	4.56	June 25	6.55	Oct. 3	5.78
Nov. 28	4.69	Aug. 3	5.90	Dec. 20	5.96
Dec. 19	4.85	25	5.86		
		Oct. 7	5.46		

S8843. E. Lester. Three Mile Harbor, Easthampton. Lat. 40°59'16", long. 72°11'02". Dug unused well in deposits of late Pleistocene age, diameter 30 inches, depth 16.6 feet. Highest water level 11.95 feet above msl, June 25, 1953; lowest 7.97 feet above msl, Jan. 23, 1951. Records published, including this report 1950-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1950		1952		Oct. 7	10.98
July 28	8.64	Jan. 28	9.02	Dec. 3	10.53
Sept. 1	8.48	Feb. 27	9.28	23	11.08
Oct. 3	8.35	Mar. 28	9.85	1954	
30	8.23	Apr. 24	10.19	Mar. 25	10.91
Nov. 28	8.09	May 28	10.53	July 2	10.92
Dec. 26	8.03	June 25	10.66	Oct. 25	10.46
1951		July 23	10.18	Dec. 27	10.63
Jan. 23	7.97	Aug. 27	10.46	1955	
Feb. 27	8.17	Sept. 24	10.23	Mar. 25	11.04
Mar. 28	8.70	Nov. 5	9.97	June 20	10.80
Apr. 25	8.81	Dec. 8	9.60	Aug. 25	10.17
May 31	9.15	23	9.45	Oct. 6	9.98
July 2	9.30	1953		Dec. 28	10.55
27	9.23	Apr. 1	10.38	1956	
Aug. 29	9.06	29	11.25	June 21	11.74
Sept. 26	8.87	May 26	11.90	Oct. 3	10.60
Oct. 31	8.68	June 25	11.95	Dec. 21	9.87
Nov. 28	8.66	Aug. 3	11.54		
Dec. 19	8.59	25	11.38		

S8845. Tiffany. Lumber Co., Bridgehampton. Lat. 40°56'41", long. 72°18'17". Dug unused well in deposits of late Pleistocene age, diameter 36 inches, depth 60.3 feet. Highest water level 19.07 feet above msl, June 21, 1956; lowest 13.11 feet above msl, Oct. 30, 1950. Records published, including this report: 1950-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1950		Feb. 27	15.19	Dec. 23	17.58
Oct. 30	13.11	Mar. 26	15.49	1954	
Nov. 28	Dry	Apr. 24	16.00	Mar. 25	17.96
Dec. 26	Dry	May 28	16.39	July 2	17.84
1951		June 25	16.68	Oct. 1	17.63
Jan. 23	Dry	July 23	16.85	25	17.58
Feb. 27	Dry	Aug. 27	16.83	Dec. 27	17.50
Mar. 28	Dry	Sept. 24	16.18	1955	
Apr. 1	13.96	Nov. 5	15.98	Mar. 25	17.66
25	14.27	Dec. 8	15.38	June 20	17.03
May 31	14.43	23	15.87	Aug. 25	16.93
July 2	14.48	1953		Oct. 6	16.30
27	14.65	Apr. 1	17.10	Dec. 28	16.46
Aug. 29	14.85	29	18.46	1956	
Sept. 26	14.80	May 26	18.66	June 21	19.07
Oct. 31	13.77	June 25	18.85	Oct. 3	16.71
Nov. 28	13.81	Aug. 3	17.93	Dec. 20	16.08
Dec. 19	14.00	25	17.89		
1952		Oct. 7	16.61		
Jan. 28	15.85	Nov. 5	16.39		
		Dec. 3	16.80		

Table 8. (Continued)

S8851. U. S. Geol. Survey. Near Cutchogue R.R. Station, Cutchogue. Lat. 41°01'17", long. 72°29'30". Driven observation well in deposits of late Pleistocene age, diameter 2 inches, depth 34.5 feet. Highest water level 8.01 feet above msl, May 27, 1953; lowest 3.13 feet above msl, Nov. 28, 1950. Records published, including this report: 1950-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1950		Feb. 28	5.88	1954	
Aug. 30	3.36	Mar. 27	6.36	Mar. 26	5.56
Oct. 4	3.26	Apr. 25	6.79	July 2	5.40
Nov. 2	3.17	May 29	6.80	Aug. 26	5.38
28	3.13	June 26	6.76	Sept. 28	6.31
Dec. 28	3.26	July 30	6.13	Oct. 26	6.10
1951		Aug. 28	6.40	Dec. 28	6.36
Feb. 1	3.39	Sept. 25	6.07	1955	
28	3.63	Nov. 6	5.76	Mar. 31	6.38
Mar. 29	4.36	Dec. 5	5.67	June 22	5.63
Apr. 26	5.08	22	5.10	Aug. 24	5.31
June 4	5.31	1953		Oct. 7	5.23
July 3	5.16	Apr. 2	6.05	Dec. 28	5.00
30	4.86	May 5	7.51	1956	
Aug. 30	4.58	27	8.01	Mar. 1	6.08
Oct. 2	4.27	June 26	7.30	30	6.36
Nov. 1	4.08	Aug. 6	6.66	Apr. 30	7.19
28	4.36	26	6.39	May 28	7.30
Dec. 20	4.31	Oct. 8	5.40	June 26	6.91
1952		29	5.19	Sept. 27	5.30
Jan. 31	5.05	Nov. 25	5.17	Dec. 27	5.36
		Dec. 28	5.16		

S8854. U. S. Geol. Survey. Kaplan and North Sts., Greenport. Lat. 41°06'17", long. 72°22'02". Driven observation well in deposits of late Pleistocene age, diameter 1¼ inches, depth 29.6 feet. Highest water level 2.60 feet above msl, Apr. 8, 1953; lowest 0.98 feet above msl, Dec. 28, 1950, Dec. 28, 1955. Records published, including this report: 1950-56.

Water level above msl, Sandy Hook, N. J. datum

Date	Water level	Date	Water level	Date	Water level
1950		1952		Oct. 8	1.06
Aug. 31	1.01	Jan. 31	1.32	Nov. 5	1.44
Oct. 4	1.00	Feb. 28	1.76	Dec. 8	1.88
Nov. 1	1.10	Mar. 27	1.85	23	1.94
29	1.06	Apr. 25	1.48	1954	
Dec. 28	.98	May 29	1.76	Mar. 26	1.38
1951		June 26	1.40	July 1	1.24
Feb. 1	1.20	July 30	1.10	Sept. 28	2.24
28	1.06	Aug. 28	1.96	Oct. 28	1.43
Mar. 29	1.61	Sept. 25	1.23	Dec. 28	1.70
Apr. 26	1.49	Nov. 6	1.05	1955	
June 26	1.37	Dec. 5	1.37	Mar. 31	1.27
July 3	1.43	23	1.45	June 22	1.10
30	1.24	1953		Oct. 7	1.66
Aug. 30	1.09	Apr. 8	2.60	Dec. 28	.98
Oct. 3	1.06	May 6	1.97	1956	
Nov. 1	1.22	27	1.70	June 26	1.31
28	1.26	June 26	1.13	Sept. 26	1.80
Dec. 20	1.17	Aug. 6	1.05	Dec. 26	1.56
		26	1.10		

S8853. A. Rutkowski. Route 25, Greenport. Lat. 41°05'38", long. 72°22'44". Driven unused well in deposits of late Pleistocene age, diameter 1¼ inches, depth 34.0 feet. Highest water level 3.49* feet above msl, Apr. 2, 1953; lowest 0.95* feet above msl, July 2, 1954. Records published, including this report: 1950-56.

Water level above msl, Sandy Hook, N. J. datum

1950		1952		Oct. 8	1.22
Aug. 31	1.17	Jan. 31	1.50	Nov. 3	1.61
Oct. 4	1.00	Feb. 20	1.76	Dec. 8	2.07
Nov. 1	1.31	Mar. 27	1.76	23	1.78
29	1.30	Apr. 25	1.33	1954	
Dec. 28	1.19	May 29	1.69	Mar. 26	1.37
1951		June 26	1.63	July 2	.95
Feb. 1	1.33	July 30	1.76	Sept. 28	2.04
26	1.02	Aug. 28	1.69	Oct. 28	1.60
Mar. 29	1.29	Sept. 25	1.10	Dec. 28	1.65
Apr. 26	1.01	Nov. 6	1.51	1955	
June 4	1.55	Dec. 5	1.43	Mar. 31	2.09
July 3	1.60	22	2.00	June 22	1.33
30	1.33	1953		Aug. 24	1.78
Aug. 30	1.18	Apr. 2	3.49	Oct. 7	1.58
Oct. 2	1.30	May 5	1.70	Dec. 29	1.16
Nov. 1	1.35	27	1.66	1956	
29	1.65	June 26	.97	June 26	1.43
Dec. 20	1.06	Aug. 6	.97	Sept. 26	1.76
		26	1.36	Dec. 26	1.49

* Records previously published are in error. Add 0.20 foot to convert previously published measurements to msl, Sandy Hook, N. J. datum.

S15165. Sag Harbor Tpke., 0.3 mi. south of Scuttlehole Rd., Bridgehampton. Lat. 40°57'45", long. 72°17'55". Driven observation well in deposits of late Pleistocene age, diameter 2 inches, depth 60.5 feet. Highest water level 22.37 feet above msl, Oct. 25, 1954; lowest 15.17 feet above msl, Feb. 27, 1951. Records published, including this report 1950-56.

Water level above msl, Sandy Hook, N. J. datum

1950		Feb. 27	17.42	1954	
Oct. 3	16.17	Mar. 26	17.73	Mar. 25	20.65
30	16.21	Apr. 24	18.24	July 2	20.08
Nov. 28	15.99	May 28	18.65	Oct. 25	22.37
Dec. 26	15.96	June 25	19.08	Dec. 27	21.62
1951		July 23	19.30	1955	
Jan. 23	15.63	Aug. 27	19.24	Mar. 25	20.89
Feb. 27	15.17	Sept. 24	19.16	June 20	20.18
Mar. 28	16.13	Nov. 5	18.86	Aug. 25	20.50
Apr. 25	16.21	Dec. 8	18.93	Oct. 6	19.36
May 31	16.26	23	18.15	Dec. 28	20.24
July 2	16.89	1953		1956	
27	17.18	Apr. 1	18.98	June 21	21.31
Aug. 25	17.25	29	20.22	Aug. 29	20.79
Sept. 26	17.30	May 26	21.74	Oct. 3	20.74
Oct. 31	17.34	June 25	22.18	Dec. 20	20.11
Nov. 28	17.38	Aug. 3	21.70		
Dec. 19	17.72	25	21.24		
1952		Oct. 7	20.54		
Jan. 28	16.65	Nov. 5	20.16		
		Dec. 3	19.64		
		23	19.89		

Table 3.--Geological Survey annual water-supply papers containing tabulated water-level record for Suffolk County, Long Island, N. Y.

Title of publications containing water-level record for Suffolk County, L. I., N. Y.:

1. Publications numbered 777, 817, 840, 845, and 886 are entitled "Water levels and artesian pressures in observation wells in the United States, in 19--" -- U. S. Geol. Survey Water-Supply Paper No. ____ (insert number from table). Published yearly.
2. Publications numbered 906, 936, 944, 986, 1016, 1023, 1071, 1096, 1126, 1156, 1165, 1191, 1221, 1265, 1321, and 1404 are entitled "Water levels and artesian pressures in observation wells in the United States in 19--, part 1, Northeastern States" -- U. S. Geol. Survey Water-Supply Paper No. ____ (insert number from table). Published yearly.
3. One publication will present data for 1956 and 1957 and will be entitled "Ground-water levels in the United States, Northeastern States, 1956 to 1957" -- U. S. Geol. Survey Water-Supply Paper No. ____ (number is not yet available). Subsequent publications will carry similar titles and will be published only at 5-year intervals.
4. Where no footnote symbol or serial number appears in the table below, no water-level record is currently (1956) on file at the U. S. Geol. Survey office in Mineola, N. Y.
5. Publications listed in the table below are for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Aquifer in which observation well is screened: L, Lloyd sand member of the Raritan formation; M, Magothy(?) formation; where no designation is made aquifer is understood to be of late Pleistocene or of Recent age.

Well number: State	Well number: Other a/	Map coordinates	Location	Aquifer	1907	1908	1909	1910	1911	1912	1913	1914	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
S20		E-9	South Huntington		...	...	...	...	...	...	...	...	...	...	...	...	840	840	845	886	906	936	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...
S38		C-10	Bayshore	M	...	...	...	...	...	...	...	...	...	777	777	777	777	840	845	886	906	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
S58		C-11	Islip	M	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S201		E-11	Smithtown		...	...	...	...	...	...	...	...	...	...	...	...	...	840	845	886	906	936	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
S200		E-8	Huntington	L	...	...	...	...	...	...	...	...	...	...	...	...	840	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S203		D-9	Dix Hills	M	...	...	...	...	...	...	...	...	...	...	...	...	...	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	...	...	...
S979		H-21	East Marion		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1191	1191	1191	1221	1265	1321	1404	b
S1803	SU-12	C-9	Babylon		...	...	...	...	...	840	840	840	840	...	...	...	840	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1804	SU-30	C-9	Amityville		...	...	...	...	...	840	840	840	840	840	840	840	840	840	845	886	906	936	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...
S1805	SU-37	C-9	do.		...	...	...	...	...	840	840	840	840	840	...	840	840	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1806	SU-47	C-9	Pinelawn		...	...	...	...	...	840	840	840	840	840	840	840	840	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1807	SU-66	C-10	Babylon		...	...	...	...	...	840	840	840	840	840	...	...	840	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1808	SU-75	C-10	Brightwaters		...	...	...	...	...	777	777	777	777	777	...	777	817	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1809	SU-81	C-10	do.		...	...	...	...	...	777	777	777	777	777	777	777	817	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1810	SU-86	D-10	Pineaire		...	...	...	...	...	777	777	777	777	777	777	777	817	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b,c
S1811	SU-101	D-12	Ronkonkoma		...	...	...	...	...	...	...	...	...	...	...	...	...	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1812	SU-102	E-12	Nesconset		...	...	...	...	...	...	...	...	...	...	...	...	...	840	845	886	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S1813		D-12	Ronkonkoma		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	906	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S1814		D-11	Central Islip		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	906	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S1815		D-11	Brentwood		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	906	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S1816		D-10	Deer Park		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	906	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S1817		D-9	Wyandanch		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	906	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S2020		F-9	Eatons Neck	L	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	906	936	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
S2146		C-26	Montauk		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1191	1221	1265	1321	1404	...

See footnotes at end of table.

Table 3.- (Continued)

Well number: State	Well number: Other a/	Map coordinates	Location	Aquifer	1907	1908	1909	1910	1911	1912	1913	1914	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
S4314		D-9	Wyandanch	M	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S2454		C-10	Babylon		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S2415		C-10	Bayshore		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	906	936	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S2543		D-11	Central Islip		936	936	936	...	...	...	...	...	...	...	...	...	...	...	...	...	...	936	944	986	...	...	...	...	...	...	...	...	...	...	...	...	...
S3112		C-9	Wyandanch		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	936	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S3496		D-13	Holbrook		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S3497		D-13	Holtsville		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S3498		D-13	Medford		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	b	b	b	b	b	b
S3512		D-12	Lake Grove		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	b	b	b	b	b	b
S3513		D-13	Selden		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b,c
S3514		D-10	Commack		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b,c
S3515		C-10	Bayshore		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	...	...	...
S3516		D-10	do.		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S3517		C-12	Bayville		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S3518		D-11	Central Islip		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S3519		D-11	do.		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S3520		D-13	Blue Point		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	...	...	...	...	...	...	...	...	...	...	...	...	...
S3521		D-13	Medford		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	b	b	b	b	b	b
S3522		D-13	Patchogue		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	b	b	b	b	b	b
S3523		D-14	do.		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	...	...	...	...	...	...	...	...	...	...	...
S3524		D-15	Yaphank		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S3525		D-15	do.		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	...	...	...	...	...	...	...	...	...	...	...
S3526		D-15	do.		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b
S3527		D-16	Plainfield		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S3528		D-14	Patchogue		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	...	...	...	...	...	...	...	...	...	...	...	...	...
S3529		D-14	Brookhaven		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,c
S3530		D-14	Yaphank		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S3531 (See S9130)		D-15	South Haven		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	d	d	d	d	d	b,d
S3532		D-15	Ridge		944	944	944	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	944	986	1016	1023	1071	1096	1126	1156	1165	1191	1221	1265	1321	1404	b

See footnotes at end of table.

REFERENCE NO. 7

LONG ISLAND WATER RESOURCES

LONG ISLAND WATER RESOURCES BULLETIN NO. 1

RESULTS OF SUBSURFACE EXPLORATION IN THE MID-ISLAND AREA of WESTERN SUFFOLK COUNTY

Long Island, New York

by

JULIAN SOREN

U.S. GEOLOGICAL SURVEY

PUBLISHED BY

SUFFOLK COUNTY WATER AUTHORITY

1971

LONG ISLAND WATER RESOURCES
BULLETIN NUMBER 1

RESULTS OF SUBSURFACE EXPLORATION IN THE MID-ISLAND AREA OF WESTERN SUFFOLK COUNTY, LONG ISLAND, NEW YORK

BY
JULIAN SOREN
U. S. GEOLOGICAL SURVEY

WITH A SECTION ON
POTENTIAL DEVELOPMENT OF GROUNDWATER
IN THE MID-ISLAND AREA

BY
PHILIP COHEN
U. S. GEOLOGICAL SURVEY

PREPARED BY

U. S. GEOLOGICAL SURVEY

IN COOPERATION WITH

SUFFOLK COUNTY LEGISLATURE
SUFFOLK COUNTY WATER AUTHORITY

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GEOHYDROLOGY

GEOLOGY AND AQUIFERS

Unconsolidated deposits, ranging in age from Late Cretaceous to Pleistocene, underlie the mid-island area. These deposits contain several major aquifers and constitute the ground-water reservoir. Thin surficial Holocene deposits of soil and some swamp accumulations occur from place to place, but these are of little significance to the ground-water reservoir. The unconsolidated deposits rest unconformably on crystalline bedrock consisting of Precambrian (?) schist and gneiss which is considered to be the bottom of the ground-water reservoir on Long Island.

The unconsolidated deposits, from the bedrock upward, include the Lloyd Sand Member and clay member of the Raritan Formation of Late Cretaceous age, the Matawan Group-Magothy Formation, undifferentiated, also of Late Cretaceous age, and glacial deposits of Pleistocene age. The major aquifers in the area are the deposits of sand and gravel in the Pleistocene and the Matawan-Magothy strata. The test drilling described previously was carried out mostly to the depth of the upper part of the clay member. Therefore, the drilling served to determine the base of the Matawan-Magothy deposits. The drilling also served to obtain information on the configuration of the top of the Matawan-Magothy deposits, which were deeply eroded during Tertiary and, probably, Pleistocene time.

BEDROCK OF THE PRECAMBRIAN (?) SYSTEM

The Precambrian (?) gneiss and schist which underlies Long Island is hard and dense. Virtually all the water in these rocks is found in joints, faults, and foliation planes. Because these openings are usually tight and poorly connected, the bedrock is practically impermeable, especially by comparison with the overlying unconsolidated formations. No wells are known to tap bedrock in the mid-island area.

The bedrock was eroded to a peneplain prior to the deposition of the Cretaceous strata. In the mid-island area, the bedrock surface dips gently southeast at an average slope of about 65 feet per mile (about two-thirds of a degree), and its altitude ranges from about 800 feet below sea level in the northwestern corner of the area to about 1,600 feet below sea level in the southeastern part (pl. 2).

UPPER CRETACEOUS SERIES

Raritan Formation

Lloyd Sand Member

The Lloyd Sand Member of the Raritan Formation comprises the Lloyd aquifer on Long Island. This unit consists mostly of beds and lenses of light- to medium-gray sand and gravelly sand, commonly containing small to large amounts of interstitial clay and silt, that are intercalated with beds and lenses of light- to dark-gray clay, silt, and clayey and silty sand.

Only two drill holes are known to have penetrated the Lloyd in the mid-island area. One hole partly penetrated the unit at the Pilgrim State Hospital, in Brentwood. The second hole, which is in the village of Lake Ronkonkoma, and which was one of the test holes drilled as part of this study, fully penetrated the unit. A log of the test hole describing lithology of the Lloyd is shown in table 1, S33379.

The surface of the Lloyd is roughly parallel to the bedrock surface. The Lloyd surface dips from an altitude of about 550 feet below sea level in the northwestern part of the area, to an altitude of about 1,250 feet below sea level in the southeastern part (pl. 2), and the unit's thickness ranges from about 260 feet to 360 feet from northwest to southeast, respectively. Plate 2 shows contours on the Lloyd surface. Plate 2 also shows contours on the bedrock surface; therefore, the Lloyd's thickness, in any part of the area, can be estimated by computing the local difference between the altitudes of the bedrock and Lloyd surfaces.

The Lloyd aquifer is moderately permeable. Its average horizontal permeability has been estimated by Lusczynski and Swarzenski (1966, p. 19), Isbister (1966, p. 20), and Soren (in press) to range between 400 and 500 gpd per sq ft (gallons per day per square foot) in Queens and Nassau Counties, west of the mid-island area. Warren and others (1968, p. 102) estimated the Lloyd's horizontal permeability to be 165 gpd per sq ft at the Brookhaven National Laboratory, about 12 miles east of the mid-island area. The section of Lloyd penetrated by the test well near Lake Ronkonkoma was fairly sandy and gravelly (table 1, S33379), and at this site the average horizontal permeability of the Lloyd probably is considerably more than 500 gpd per sq ft. Wells tapping the Lloyd in other parts of Long Island have been pumped at rates of as much as 1,600 gpm (gallons per minute), and the specific capacities of these wells (pumpage, in gallons per minute, divided by drawdown, in feet) have been reported to range from 3 to 40 gpm per foot of drawdown.

At present, there is no pumpage from the Lloyd aquifer in the mid-island area, mainly because of the great depth of the aquifer, and because more permeable aquifers are found at shallower depths. In addition to being at a greater depth, the water from the Lloyd commonly has undesirably high concentrations of iron.

Clay Member

The clay member of the Raritan Formation (commonly referred to as the Raritan clay) completely covers the underlying Lloyd aquifer in the mid-island area, and confines water in that aquifer. The Raritan clay consists mostly of beds and lenses of light- to dark-gray clay, silt, and clayey and silty fine sand (table 1). Thin to thick sandy beds commonly occur in the unit from place to place, but these beds do not have great lateral extent. Laminae and thin beds of lignite and pyrite and disseminated particles of these substances are common in the clay beds of the unit. The thickness of the Raritan clay increases to the southeast, and ranges from about 150 feet in the northwestern part of the mid-island area to about 200 feet in the southeastern part.

The surface of the Raritan clay is roughly parallel to that of the underlying Lloyd Sand Member. The altitude of the surface of the Raritan clay ranges from about 300 feet below sea level in the northwestern part of the mid-island area, to about 1,050 feet below sea level in the southeastern part (pl. 3).

Matawan Group-Magothy Formation, Undifferentiated

The Matawan Group-Magothy Formation, undifferentiated, comprises the Magothy aquifer of Long Island. Deposits in this unit consist of beds and lenses of light-gray fine to coarse sand, containing traces to large amounts of interstitial clay and silt, intercalated with thin to thick beds and lenses of light- to dark-gray clay, silt, and clayey and silty sand (table 1). The clay and silt beds commonly contain laminae and thin beds of lignite. Disseminated lignite and pyrite also are common in the sand beds of the aquifer. Gravelly coarse sand is commonly found in the basal part of the aquifer. This coarse zone ranges in thickness from 100 to 150 feet west of the mid-island area to 150 to 200 feet in the mid-island area. The basal zone also commonly contains abundant interstitial clay and silt and many thin to thick beds and lenses of clay, silt, and clayey and silty sand.

The surface of the Magothy aquifer (pl. 4) is not planar as are the surfaces of the underlying units. The Magothy surface was deeply eroded during Tertiary time, and probably was considerably eroded in Pleistocene time. Consequently, the depth to the Magothy aquifer and the aquifer's thickness cannot be predicted as accurately as the depths and thicknesses of the underlying units. Many control points in addition to those already known are needed to accurately map the upper surface of the Magothy aquifer.

The highly irregular character of the surface of the Magothy aquifer is shown in plate 4. The upper surface of the aquifer ranges in altitude from as high as about 200 feet above sea level to as low as about 500 feet below sea level. The Magothy was completely removed by erosion in a buried valley near the South Huntington area, and in that area upper Pleistocene deposits lie directly on the Raritan clay. This buried valley was called the "Huntington buried valley" by Lubke (1964, pl. 3), and as mapped by Lubke, the valley extended about 2-1/2 miles south of the Northern State Parkway.

Information from wells drilled after Lubke's investigation indicates that the Huntington buried valley continues southeastward, joining another buried valley in the Deer Park area. From Deer Park, the valley appears to extend southeastward across Long Island to the Fire Island Pines area of Fire Island, about 10 miles southeast of Deer Park, where the Magothy surface was shown to be about 350 feet below sea level by Perlmutter and Todd (1965, pl. 8).

The Huntington and Deer Park buried valleys are separated by a divide across the buried valley system in the Deer Park area. The Huntington buried valley slopes steeply northwestward from the divide; the Deer Park buried valley has a gentle southward slope toward the Fire Island Pines area. The divide across the valley approximately coincides with the southern margin of the Ronkonkoma terminal moraine. (See the following section, "Pleistocene Series.") The steeper Huntington buried valley was probably overdeepened by scouring action of Pleistocene glaciation. Other buried valleys in the northern part of the mid-island area (pl. 4) are not as deep nor as extensive as the Huntington and Deer Park buried valleys.

A large depression in the Magothy surface is apparent in the St. James-Ronkonkoma area. Lubke (1964, pl. 3) showed the Magothy surface to be more than 200 feet below sea level in this area. More recent information indicates that the Magothy surface in this area is more than 500 feet below sea level (pl. 4). This large depression is here called the Ronkonkoma basin (pls. 4-5). The precise origin of this basin is not known, but it probably was at least partly a result of Pleistocene glacial scouring of a pre-existing valley system. The depression appears to have had no outlet, and its southernmost end coincides approximately with the southern margin of the Ronkonkoma terminal moraine.

Representative thicknesses of the Magothy aquifer are shown in geologic sections in plate 5. In these sections, the thickness of the Magothy ranges from about 300 to 800 feet. The estimated thickness of the Magothy aquifer in any part of the mid-island area can be computed by determining the difference between altitudes of the Magothy and Raritan surfaces as shown in plates 3 and 4. The Magothy aquifer is thickest (about 950 feet) in the southeastern corner of the project area, and it is thinnest in the bottom of the buried valleys. As previously noted, the aquifer is completely missing in part of the buried valley near South Huntington (pl. 4).

The permeability of the Magothy aquifer ranges widely. The estimated average horizontal permeability of the aquifer is about 500 gpd per sq ft in Nassau and Queens Counties (Lusczynski and Swarzenski, 1966, p. 19; Isbister, 1966, p. 23-24; and Soren, in press); however, the permeabilities of some beds in the aquifer may be as high as 2,000 gpd per sq ft (Isbister, 1966, p. 23). Public-supply wells screened in the Magothy aquifer of the mid-island area have yielded as much as 1,700 gpm, with specific capacities ranging from about 14 to 85 gpm per ft of drawdown.

PLEISTOCENE SERIES

Upper Pleistocene deposits

Pleistocene deposits of glacial origin mantle the surface of the mid-island area (pl. 1) and range in thickness from a few tens of feet in some localities to more than 600 feet in buried valleys. The approximate thickness of Pleistocene deposits at any place generally can be computed by determining the difference between the altitude of the land surface and the altitude of the surface of the Magothy aquifer.

Most and perhaps all the glacial materials on Long Island were deposited in Wisconsin time, and these materials generally are collectively termed upper Pleistocene deposits. The upper Pleistocene deposits in the mid-island area include terminal moraines, outwash deposits, ground moraine, and lake deposits. The Harbor Hill and Ronkonkoma terminal moraines form the irregular ridges trending east-northeast across the area. Outwash deposits derived from melted glacial ice lie south of the Ronkonkoma terminal moraine. Glacial lake deposits, which apparently were formed between the Ronkonkoma and Harbor Hill advances of the glaciers, lie within outwash deposits below the land surface, and occur mostly between the terminal moraines in the eastern half of the area, most notably in the Smithtown-St. James-Ronkonkoma area.

Ronkonkoma Terminal Moraine

The Ronkonkoma terminal moraine marks the farthest advance of glaciation on Long Island. The moraine is composed largely of crudely stratified sand and gravel. It underlies the highest parts of the mid-island area, tapering from an irregular broad band in the western part, to an irregular narrow ridge in the eastern part. (See plate 1.) The unit lies mostly above the water table and is, therefore, practically of no significance as a source of ground water; however, it is a difficult unit to drill through because of the large amounts of gravel, cobbles, and scattered boulders that it contains.

Harbor Hill Terminal Moraine

Only a very small part of this moraine is found in the mid-island area, in the extreme northwest corner near South Huntington (pl. 1). Most of this moraine is north of the mid-island area. The moraine's lithology and water-bearing characteristics are similar to those of the Ronkonkoma terminal moraine.

Outwash Deposits

The outwash deposits, which are found south of the Ronkonkoma terminal moraine and between the Harbor Hill and Ronkonkoma terminal moraines (fig. 2), are beds of sand and gravel that were deposited by glacial melt water. The source of the rock materials in the outwash deposits is manifold. As the glaciers moved southward to Long Island, they plucked the bedrock and soils of the surfaces they slid over. Rock materials were incorporated into the ice in contact zones and were also pushed along the glacial front. As the ice melted in late Pleistocene time, the various rock materials were carried away by broad coalescing streams and sheets of water. Consequently, the outwash deposits are stratified, and because of the varied materials carried by the glacier, these deposits consist of a heterogeneous suite of rock types. The great diversity of rock and mineral suites in the Pleistocene deposits, along with the chemically unstable (easily decomposed) rocks and minerals, commonly facilitates differentiation of glacial from the Cretaceous deposits on Long Island.

Outwash deposits underlie the plain in the mid-island area south of the Ronkonkoma terminal moraine, where the major source of glacial deposition was material from the Ronkonkoma ice advance. A readvance of the glacial front followed recession of the Ronkonkoma ice front and resulted in the formation of the Harbor Hill terminal moraine. Lakes were formed in depressions and valleys between the Ronkonkoma and Harbor Hill terminal moraines, and clayey materials were deposited in these lakes. The intermorainal areas also contain recessional deposits of outwash and ground moraine (see the following section, "Ground-Moraine Deposits") from the Ronkonkoma and Harbor Hill deglaciations, and these materials buried the clayey lake deposits.

The outwash deposits are thickest in the buried valleys and thinnest where the Cretaceous surface is closest to land surface (pl. 5). These deposits generally extend below the water table, and are a major source of ground water. Outwash deposits comprise most of the so-called upper glacial aquifer of Long Island, and because these deposits of sand and gravel contain virtually no interstitial clay and silt, the upper glacial aquifer is the most permeable aquifer on Long Island. The estimated average horizontal permeability of the outwash deposits is about 1,000 to 1,500 gpd per sq ft (Lusczynski and Swarzenski, 1966, p. 17; and Soren, in press). Warren and others (1968, p. 75) computed the horizontal permeability of outwash to be about 1,300 gpd per sq ft at the Brookhaven National Laboratory, east of the mid-island area. A horizontal permeability for outwash as high as about 2,500 gpd per sq ft has been reported in Nassau County, west of the project area (Isbister, 1966, p. 29).

Public-supply and other high-capacity wells screened in glacial outwash on Long Island have yielded as much as 1,700 gpm, and reported specific capacities of such wells range from less than 10 gpm per foot of drawdown to as much as about 200 gpm per foot of drawdown; however, the specific capacities range mostly from 50 to 100 gpm per foot of drawdown. (See section "Yields of Individual Wells.")

Ground-Moraine Deposits

Ground-moraine deposits commonly consist of unstratified and unsorted clay, silt, sand, gravel, cobbles, and boulders, deposited on the land surface as the glacial fronts receded. Ground-moraine deposits from the Ronkonkoma advance probably occur beneath the outwash in the area between the Ronkonkoma and Harbor Hill terminal moraines. Some ground-moraine deposits probably were partly reworked by glacial melt water from the Harbor Hill advance and probably appear similar to outwash in drilling samples.

Lake Deposits

A large lake apparently existed between the Ronkonkoma and Harbor Hill terminal moraines in the previously described Ronkonkoma basin. Deposits of light- to dark-brown and gray clay and silt of lacustrine origin, with some included beds of sand and gravel, occur between deposits of outwash in this area. The deposits are informally known as the Smithtown clay unit or Smithtown clay, and they were mapped and described by Lubke (1964, p. 22 and 26) as the "clay unit of Smithtown." Thin to significant thicknesses of this unit were penetrated at four of the test-drilling sites in the eastern half of the mid-island area. (See plate 5 and table 1, S22577, S22910T, S24769, and S24772). Apparently, it is thickest near the community of Lake Grove (not shown in plate 1) about 2.5 miles north of Lake Ronkonkoma, where about 300 feet of Pleistocene clay beds were penetrated in a drilled test hole (Jensen, H. M., oral commun., 1969).

Smaller glacial lakes probably also existed in other parts of the intermorainal area. Many drilling logs from localities in the area indicate thin intercalated clay and fine sand beds between sand and gravel deposits. The extent of these lakes is not fully known, and they were probably small compared to the lake in which the Smithtown clay was deposited.

Veatch and others (1906, p. 61) suggested that present Lake Ronkonkoma, in the eastern part of the mid-island area, is in a depression made by a large ice block that was detached from the main glacial-front mass and buried by outwash deposits. Subsequent melting of the ice block presumably caused the depression in the land surface which then filled with water. Inasmuch as this study has shown that present Lake Ronkonkoma is in the Ronkonkoma basin, it seems possible that the location of the lake may merely reflect the fact that the ancient Ronkonkoma basin was not completely filled by glacial deposits.

The lake deposits do not yield significant quantities of water to wells because they are fine-textured and, accordingly, poorly permeable. However, the lake beds are hydrologically significant because they confine water in the underlying outwash deposits.

Miscellaneous Deposits

The Mannetto Gravel, of Pliocene age, and the Gardiners Clay, a Pleistocene interglacial marine deposit of pre-Wisconsin age, are two additional units of hydrologic signifiance in some parts of Long Island. However, their location and extent in the project area are poorly known, and they seem to occur in only a small part of the area.

The Mannetto Gravel was described and mapped by Fuller (1914, p. 80-85) from the western edge of the mid-island area to about as far east as the area between Wyandanch and Deer Park. The unit reportedly crops out at the tops of high hills, or near the crests of high hills capped by Ronkonkoma terminal moraine deposits. The author could not verify the location and extent of the Mannetto; consequently, the unit is not shown on the surficial geology map (pl. 1).

The Gardiners Clay is an interglacial marine deposit of Sangamon age. It is generally found in the south shore areas of Long Island where the depth to its surface is commonly 40 or more feet below sea level. The Gardiners Clay overlies Matawan-Magothy strata south of the mid-island area (Perlmutter and Todd, 1965, pl. 8), and some clay beds reported by well drillers in the southern part of the buried valley near Deer Park may be Gardiners Clay. However, this is uncertain, and the unit may not be present in the project area.

GROUND-WATER SYSTEM

SOURCE AND MOVEMENT OF GROUND WATER

The ground water on Long Island has its origin in precipitation that falls on the island. According to Cohen and others (1968, p. 36, 40, and 44), the precipitation on Long Island is disposed of as follows: nearly half returns to the atmosphere by evapotranspiration; a very small amount enters streams by direct runoff; and the remaining half percolates downward through the unconsolidated deposits to the water table and enters the ground-water reservoir.

The general ground-water movement on Long Island is from recharge areas near the center of the island to discharge areas at and near the shorelines. Ground water discharges by seepage into streams and by direct subsurface outflow into salty ground water, which in turn is hydraulically connected with bodies of salty surface water.

The horizontal components of the directions of ground-water flow in the upper glacial aquifer are shown in plate 6. In the vicinity of the major ground-water divide in the mid-island area (pl. 6), ground water generally moves downward from the upper glacial aquifer into the Magothy aquifer, and thence through the Raritan clay into the Lloyd aquifer. The vertical components of downward flow decrease with increasing distance both northward and southward of the divide. Beyond the northern and southern margins of the mid-island area, ground-water flow becomes virtually horizontal. Near the shorelines, the direction of flow is reversed, and ground-water movement is upward from the deeper aquifers toward the surface. Thus, because of the character of the flow system, under natural conditions virtually all the recharge to the Magothy and Lloyd aquifers in western Suffolk County originated in the mid-island area, and all of that recharge ultimately discharged from the ground-water system near the shorelines.

The movement of ground water through Long Island's aquifers in the horizontal direction is generally more rapid than movement in the vertical direction because of the occurrence of interbedded fine- and coarse-grained layers, and because the largest dimensions of unevenly shaped particles in the individual layers tend to be oriented horizontally. Approximate rates of ground-water movement can be computed from hydraulic gradients and estimated coefficients of permeability and porosities of the aquifers. In 1968, water in the upper glacial aquifers in the project area was moving horizontally at rates from less than 0.5 foot per day at points distant from centers of pumping, to hundreds of feet per day near the screens of pumping wells. At the same time, water in the Magothy aquifer was moving horizontally at rates from less than 0.2 foot per day at points distant from pumping, to hundreds of feet per day near the screens of pumping wells.

HYDRAULIC INTERCONNECTION OF AQUIFERS

The aquifers of Long Island are hydraulically interconnected. Layers of clay and silt within an aquifer or between aquifers serve to confine water below them, but they do not completely prevent the vertical movement of water through them. Ground water moves downward readily through coarse outwash deposits in the upper glacial aquifer. Vertical movement of water through the Magothy aquifer is impeded by beds and lenses of clay and silt. Because the clay and silt strata in the Magothy are not continuous, some water may move around lenses of this material in addition to moving slowly through the fine-grained strata.

The contact between the upper glacial and Magothy aquifers is not regular either in attitude or in composition of the contact surfaces. Glacial deposits in buried valleys are in lateral contact with truncated sandy beds in the Magothy. In the buried valleys water can laterally enter the Magothy at great depth directly from the glacial deposits, rather than the water having to move vertically to the same depth through less permeable Magothy beds. In the Huntington buried valley, glacial deposits extend completely through the Magothy aquifer to the underlying Raritan clay. (See plate 4.) In addition to the good hydraulic continuity between the upper glacial and Magothy aquifers in the buried valleys, good hydraulic continuity occurs between the aquifers outside the buried valleys where glacial sand and gravel deposits lie directly on Magothy sand beds. Thus, a fairly good hydraulic connection exists between the upper glacial and Magothy aquifers over large parts of the mid-island area, and the configuration of the piezometric surface of the Magothy aquifer is generally similar to that of the water table. However, in the mid-island area hydraulic heads in the Magothy are lower than those in the upper glacial aquifer because of the downward component of ground-water movement in the area.

The thick areally persistent Raritan clay that lies between the Magothy and Lloyd aquifers impedes but does not prevent downward movement of ground water into the Lloyd aquifer, and water in the Lloyd is tightly confined between the Raritan clay and bedrock. Downward leakage into the bedrock is negligible.

Figures 2 and 3 show hydrographs of wells screened in the upper glacial aquifer and the Magothy aquifer at the test-drilling sites in Brentwood and Hauppauge. At both sites, the heads in the deepest wells in the Magothy aquifer are about 2.5 to 3 feet lower than the heads in the shallowest wells in the upper glacial aquifer. The loss of head downward reflects the downward movement of ground water in the mid-island area. The hydrographs in figures 2 and 3 show that the heads in these two aquifers in the project area decrease at a fairly uniform rate with increasing depth. In addition, water-level fluctuations in the two groups of wells were very similar. Both of these facts, the uniform decrease in head and the similar water-level fluctuations, reflect the high degree of hydraulic interconnection between the upper glacial and Magothy aquifers.

The average vertical permeability of the Magothy aquifer is only poorly known. Estimates range from less than 1 to about 30 gpd per sq ft. Assuming that it averages about 5 gpd per sq ft in the mid-island area, the computed amount of downward ground-water movement through the Magothy aquifer in the vicinity of the ground-water divide in 1968 was about 0.4 mgd (million gallons per day) per square mile, and the estimated velocity of the downward movement was about 0.006 foot per day.

Because of the low permeability of the Raritan clay, the hydraulic-head loss across this unit is very much larger than the head loss across a comparable thickness of the Magothy and upper glacial aquifers. At the easternmost test site in the village of Lake Ronkonkoma, wells were screened near the base of the Magothy and near the top of the Lloyd aquifers (pl. 5, section A-A', S33379-80). In 1968, the head near the base of the Magothy aquifer (about 45.5 feet above sea level) was about 11.5 feet higher than the head in the Lloyd aquifer (about 34 feet above sea level). Head losses across the Raritan clay at localities east and west of the Lake Ronkonkoma area differ considerably. At Upton, about 12 miles east of the mid-island area, the head loss across the clay was about 6 feet in 1968; and at Plainview (in Nassau County), about 3 miles southwest of Melville, the head loss across the clay was about 42 feet. The differences in head loss from place to place are largely a result of differences in the vertical permeability and thickness of the Raritan clay.

The head in the Lloyd aquifer at Lake Ronkonkoma in 1968 (about 34 feet above sea level) was higher than either of the heads in the Lloyd at Upton (about 30.5 feet above sea level) and at the Suffolk-Nassau boundary (about 27.5 feet above sea level). The head in the Lloyd at Terryville, about 7 miles northeast of the Ronkonkoma area was about 21 feet above sea level in 1968, and it was 19 feet above sea level at Fire Island State Park in 1968, about 13 miles to the southwest. These data suggest that water in the Lloyd aquifer is moving radially from the Lake Ronkonkoma area. The estimated rate of horizontal movement of water in the Lloyd aquifer in the project area in 1968, was on the order of 0.1 foot per day.

REFERENCE NO. 8

HYDROGEOLOGIC CORRELATIONS FOR SELECTED WELLS ON LONG ISLAND, NEW YORK--

A data base with retrieval program

by H. T. Buxton, D. A. Smolensky, and P. K. Shernoff

U.S. GEOLOGICAL SURVEY

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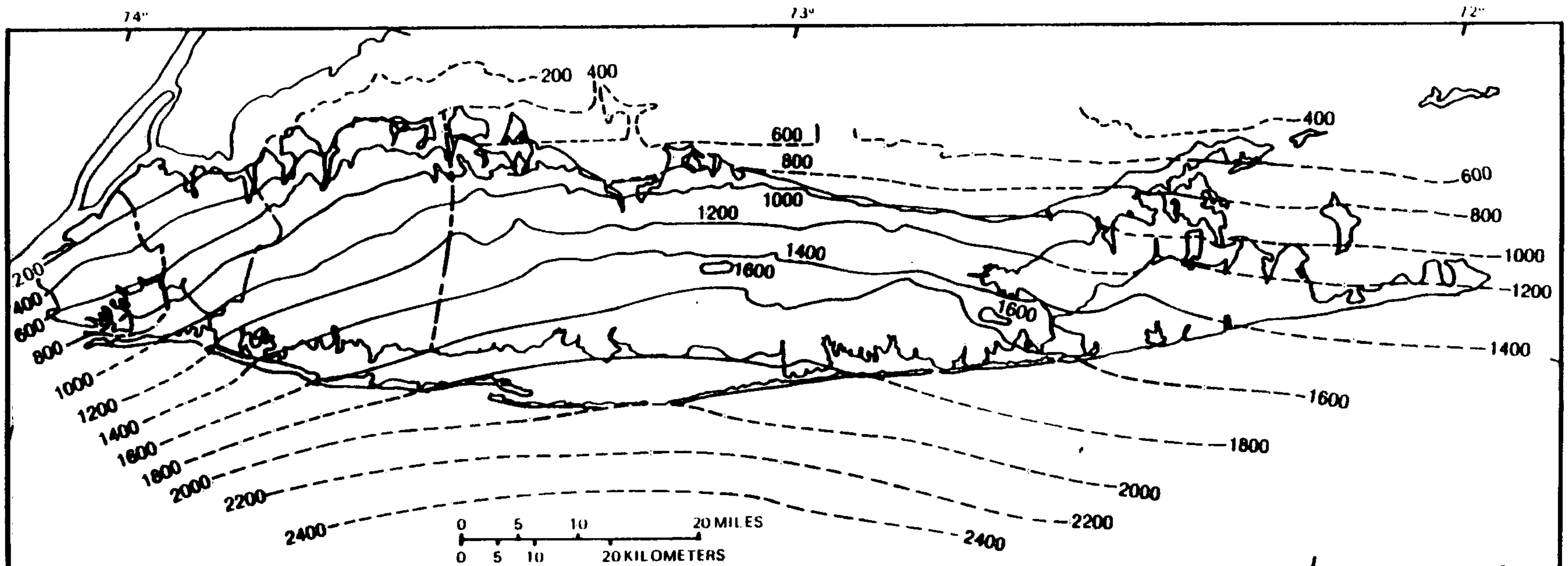
SUFFOLK COUNTY WATER AUTHORITY
NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION

Syosset, New York

1989



Base from U.S. Geological Survey
State base map, 1:500,000, 1974

EXPLANATION

1600 — — — LINE OF EQUAL THICKNESS OF UNCONSOLIDATED DEPOSITS--
Dashed where approximately located. Contour interval 200 feet

Figure 2.--Thickness of unconsolidated deposits on Long Island.

Cretaceous	Upper Cretaceous	unconformity Monmouth Group unconformity		Monmouth Greensand	200	Interbedded marine deposits of clay, silt, and sand, dark-greenish gray, greenish-black, greenish, dark-gray, and black, containing much glauconite.	Poorly permeable; primarily a confining unit for underlying Magothy aquifer. Average vertical hydraulic conductivity is approximately 0.001 ft/d.
		Matawan Group-Magothy Formation, undifferentiated unconformity		Magothy aquifer	1,100	Sand, fine to medium, clayey in part; interbedded with lenses and layers of coarse sand and sandy and solid clay. Gravel is common in basal zone. Sand and gravel are quartzose. Lignite, pyrite, and iron oxide concretions are common. Colors are gray, white, red, brown, and yellow.	Most layers are poorly to moderately permeable; some are highly permeable locally. Water is unconfined in uppermost parts, elsewhere is confined. Constitutes principal aquifer for public supply. Average horizontal hydraulic conductivity is 50 ft/d; anisotropy is approximately 100:1.
		Raritan Formation	Unnamed clay member	Raritan confining unit	200	Clay, solid and silty; few lenses and layers of sand. Lignite and pyrite are common. Colors are gray, red, and white, commonly variegated.	Poorly to very poorly permeable; constitutes confining layer for underlying Lloyd aquifer. Average vertical hydraulic conductivity is approximately 0.001 ft/d.
		Raritan Formation unconformity	Lloyd Sand Member	Lloyd aquifer	500	Sand, fine to coarse, and gravel, commonly with clayey matrix; some lenses and layers of solid and silty clay; locally contains thin lignite layers. Sand and most of gravel are quartzose. Colors are yellow, gray, and white; clay is red locally.	Poorly to moderately permeable. Water is confined by overlying Raritan clay. Average horizontal hydraulic conductivity is 40 ft/d; anisotropy is approximately 10:1.
Precambrian and Paleozoic	- - -	Bedrock		Bedrock	- -	Crystalline metamorphic and igneous rocks; muscovite-biotite schist, gneiss, and granite. A soft, clayey zone of weathered bedrock locally is more than 70 ft thick.	Poorly permeable to virtually impermeable; constitutes lower boundary of ground-water reservoir. Some hard fresh water is contained in joints and fractures but is impractical to develop at most places.

Table 1.--Hydrogeologic units of Long Island and their water-bearing properties.

System	*Series*	*Geologic unit*	*Hydro-geologic unit*	*Approxi-mate maximum thickness (ft)*	*Character of deposits*	*Water-bearing properties*
Quaternary	Holocene	Recent deposits: Salt marsh deposits, stream alluvium, shoreline deposits, and fill.	Recent deposits	50	Sand, gravel, clay, silt, organic mud, peat, loam, and shells. Colors are gray, brown, green, black, and yellow.	Beach deposits are highly permeable; marsh deposits poorly permeable. Locally hydraulically connected to underlying aquifers.
	Pleistocene	Upper Pleistocene deposits	Upper glacial aquifer	700	Till composed of clay, sand, gravel, and boulders, forms Harbor Hill and Ronkonkoma terminal moraines. Outwash deposits consist of quartzose sand, fine to very coarse, and gravel, pebble to boulder sized. Also contains lacustrine, marine, and reworked deposits. Local units are Port Washington aquifer and confining unit, "20-foot clay," and clay at Smithtown.	Till is poorly permeable. Outwash deposits are moderately to highly permeable. Glaciolacustrine and marine clay deposits are mostly poorly permeable but locally have thin, moderately permeable layers of sand and gravel. Average horizontal hydraulic conductivity is approximately 270 ft/d; conductivity of morainal material is approximately 50 percent of outwash deposits; anisotropy is approximately 10:1.
		unconformity?				
		Gardiners Clay	Gardiners Clay	150	Clay, silt, and few layers of sand. Colors are grayish green and brown. Contains marine shells and glauconite.	Poorly permeable; constitutes a confining layer for underlying aquifer. Some sand lenses may be permeable. Average vertical hydraulic conductivity is approximately 0.001 ft/d.
		unconformity?				
		Jameco Gravel	Jameco aquifer	200	Sand, fine to very coarse, and gravel to large-pebble size; few layers of clay and silt. Gravel is composed of crystalline and sedimentary rocks. Color is mostly brown.	Moderately to highly permeable. Confined by overlying Gardiners Clay. Average horizontal hydraulic conductivity is 200 to 300 ft/d; anisotropy is approximately 10:1.
		unconformity				

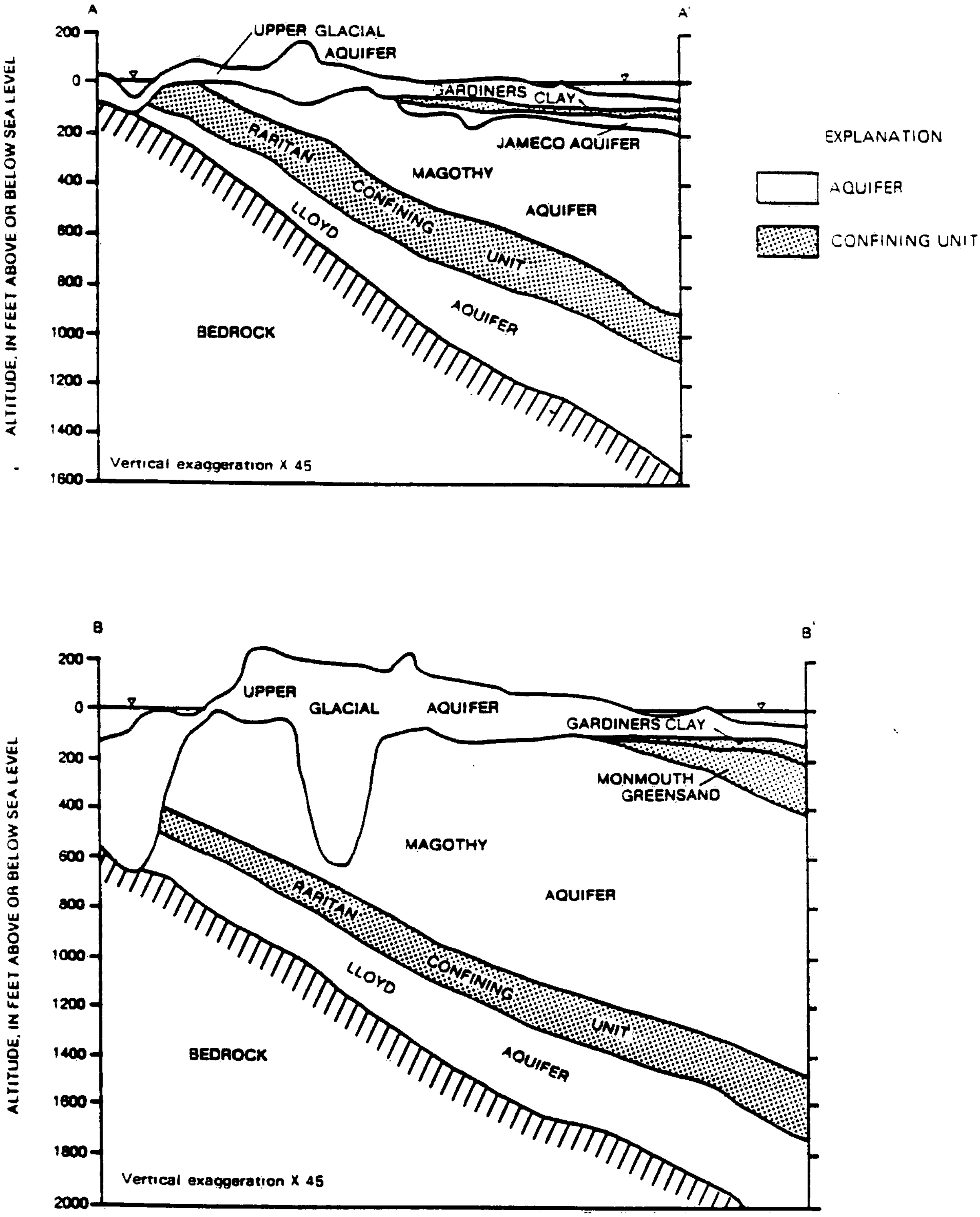


Figure 3.--Generalized vertical sections showing major hydrogeologic units: A. On western Long Island. B. On eastern Long Island. (Locations are shown in fig. 1.)

REFERENCE NO. 9

NUS CORPORATION AND SUBSIDIARIES — **TELECON NOTE**

CONTROL NO.:	DATE:	TIME:
02-9008-03	~~1030~~ 11/6/90	1030/1132

DISTRIBUTION:
File-Oakville Drum Site (WJF)

BETWEEN:	OF:	PHONE:
Audry Moore	U.S. EPA Region II Office of Ground Water Management Division	(212) 264-5635

AND:
Gerald J. Hannay (NUS)

DISCUSSION:
1030 - I asked her if there had been well head protection areas designated in Long Island yet and if there had been if there were designated areas within 4-miles of the Oakville Drum Site. She said she would call me back with that information.

1132 - She said that the primary aquifers in New York were to be considered designated well head protection areas and as such all of Long Island would be considered a designated well head protection area.

Gerald J Hannay 11/6/90

ACTION ITEMS:

REFERENCE NO. 10

NEW YORK STATE
DEPARTMENT OF TRANSPORTATION
William C Hennessy, Commissioner

OIL SPILL [illegible]

Region 10 Office. New York State Office Building
Veterans Highway, Hauppauge, New York 11787

CHAIN OF CUSTODY RECORD FOR SAMPLE ANALYSIS

Oil Spill Number: ______

Project Number: ______

Date of Sample(s): 3/19/82

Time Sample(s) Taken: 11.50, ~~[illegible]~~ 12.00, 12.10, 12.20, 12.30

Location of Sample Sources: Westhampton Air base Landfill

Number of Samples: 5

Sample Identification Number(s): RO-50, 01, 02, 03, 04, 05

Sample(s) Taken By: Richard Markel

Method of Storage: ______

Reason for Sampling: Determine Pollution downstream of Landfill

COLLECTED BY

PRINTED NAME / SIGNATURE	UNIT / TIME AND DATE	PURPOSE OF TRANSFER
Printed name: RICHARD MARKEL Signature: Richard Markel	Unit: S.C. Health Dept. Time and date: 3/19/82 2.25 P.M.	To deliver samples to Lab.

CUSTODY TRANSFERRED TO

PRINTED NAME / SIGNATURE	UNIT / TIME AND DATE	PURPOSE OF TRANSFER
Printed name: LAWRENCE PETERER Signature: Lawrence Peterer	Unit: NYSDOT Time and date: 2:25 to 3:45 on 3/19/82	FOR DELIVERY to LAB.

CUSTODY TRANSFERRED TO

PRINTED NAME / SIGNATURE	UNIT / TIME AND DATE	PURPOSE OF TRANSFER
Printed name: ROBERT C. POLS Signature: Robert C. Pols	Unit: NYSDOT Time and date: 3/19/82 3[45] to 4[29]	for delivery to Lab

CUSTODY TRANSFERRED TO

PRINTED NAME / SIGNATURE	UNIT / TIME AND DATE	PURPOSE OF TRANSFER
Printed name: FRANK GUZMAN Signature: Frank Guzman	Unit: N.Y.T.L. Time and date: 3/19/82 4:29 P.m.	FOR TESTING

RECEIVED IN LABORATORY BY

PRINTED NAME / SIGNATURE	UNIT / TIME AND DATE	PURPOSE OF TRANSFER
Printed name: Signature:	Unit: Time and date:	

LOGGED IN BY

PRINTED NAME / SIGNATURE	UNIT / TIME AND DATE	ACCESSION NO.
Printed name: Signature:	Unit: Time and date:	

NEW YORK TESTING LABORATORIES, INC.

Page 2. Sample: RO-49-01 Lab No. 83-64452 (A-1

60-62'

'OLATILE COMPOUNDS 'arameter (µg/1):	Method No.	CAS No.	Detection Limit (µg/1)	Found (µg/1)
\crolein	603, 624	107-02-8	100	< 100
\crylonitrile	603, 624	107-13-1	100	< 100
3enzene	624	71-43-2	10	< 10
3romodichloromethane	624	75-27-4	10	< 10
3romoform	624	75-25-2	10	< 10
3romomethane	624	74-83-9	10	< 10
Carbon Tetrachloride	624	56-23-5	10	< 10
Chlorobenzene	624	108-90-7	10	< 10
Chlorodibromomethane	624	124-48-1	10	< 10
Chloroethane	624	75-00-3	10	< 10
2-Chloroethyl vinyl ether	624	110-75-8	10	< 10
Chloroform	624	67-66-3	10	< 10
Chloromethane	624	74-87-3	10	< 10
Dichlorodifluoromethane	624	-	10	< 10
1,1-Dichloroethane	624	75-34-3	10	< 10
1,2-Dichloroethane	624	107-06-2	10	< 10
1,1-Dichloroethylene	624	75-35-4	10	< 10
Trans, 1,2-Dichloroethylene	624	156-60-5	10	< 10
1,2-Dichloropropane	624	78-87-5	10	< 10
1,3-Dichloropropene	624	10061-02-6	10	< 10
Ethylbenzene	624	100-41-4	10	< 10
Methylene Chloride	624	75-09-2	10	< 10
1,1,2,2-Tetrachloroethane	624	79-34-5	10	< 10
Tetrachloroethylene	624	127-18-4	10	< 10
Toluene	624	108-88-3	10	< 10
1,1,1-Trichloroethane	624	71-55-6	10	< 10
1,1,2-Trichloroethane	624	79-00-5	10	< 10
Trichloroethylene	624	79-01-6	10	< 10
Trichlorofluoromethane	624	-	10	< 10
Vinyl chloride	624	75-01-4	10	< 10
2-butanone	-	-	-	Present

< = Less than, None detected

NEW YORK TESTING LABORATORIES, INC.

Page 3. Sample: RO-49-02 **Lab No.** 82-64452 (A-1)

50 - 52'

TILE COMPOUNDS meter (µg/l):	Method No.	CAS No.	Detection Limit (µg/l)	Found (µg/l)
olein	603, 624	107-02-8	100	< 100
/lonitrile	603, 624	107-13-1	100	< 100
zene	624	71-43-2	10	< 10
modichloromethane	624	75-27-4	10	< 10
moform	624	75-25-2	10	< 10
momethane	624	74-83-9	10	< 10
bon Tetrachloride	624	56-23-5	10	< 10
orobenzene	624	108-90-7	10	< 10
lorodibromomethane	624	124-48-1	10	< 10
loroethane	624	75-00-3	10	< 10
Chloroethyl vinyl ether	624	110-75-8	10	< 10
loroform	624	67-66-3	10	< 10
loromethane	624	74-87-3	10	< 10
chlorodifluoromethane	624	-	10	< 10
1-Dichloroethane	624	75-34-3	10	< 10
2-Dichloroethane	624	107-06-2	10	< 10
1-Dichloroethylene	624	75-35-4	10	< 10
ans, 1,2-Dichloroethylene	624	156-60-5	10	< 10
,2-Dichloropropane	624	78-87-5	10	< 10
,3-Dichloropropene	624	10061-02-6	10	< 10
thylbenzene	624	100-41-4	10	< 10
ethylene Chloride	624	75-09-2	10	< 10
,1,2,2-Tetrachloroethane	624	79-34-5	10	< 10
etrachloroethylene	624	127-18-4	10	< 10
oluene	624	108-88-3	10	< 10
,1,1-Trichloroethane	624	71-55-6	10	< 10
,1,2-Trichloroethane	624	79-00-5	10	< 10
richloroethylene	624	79-01-6	10	< 10
richlorofluoromethane	624	-	10	< 10
inyl chloride	624	75-01-4	10	< 10
2-butanone	-	-	-	Present

NEW YORK TESTING LABORATORIES, INC.

Page 4. Sample: RO-49-03 Lab No. 82-64452 (A-1)

40'-42'

TILE COMPOUNDS

meter (µg/1):	Method No.	CAS No.	Detection Limit (µg/1)	Found (µg/1)
lein	603, 624	107-02-8	100	< 100
lonitrile	603, 624	107-13-1	100	< 100
zene	624	71-43-2	10	< 10
nodichloromethane	624	75-27-4	10	< 10
moform	624	75-25-2	10	< 10
momethane	624	74-83-9	10	< 10
bon Tetrachloride	624	56-23-5	10	< 10
orobenzene	624	108-90-7	10	< 10
orodibromomethane	624	124-48-1	10	< 10
loroethane	624	75-00-3	10	< 10
Chloroethyl vinyl ether	624	110-75-8	10	< 10
loroform	624	67-66-3	10	< 10
loromethane	624	74-87-3	10	< 10
chlorodifluoromethane	624	-	10	< 10
1-Dichloroethane	624	75-34-3	10	< 10
2-Dichloroethane	624	107-06-2	10	< 10
1-Dichloroethylene	624	75-35-4	10	< 10
ans, 1,2-Dichloroethylene	624	156-60-5	10	< 10
,2-Dichloropropane	624	78-87-5	10	< 10
,3-Dichloropropene	624	10061-02-6	10	< 10
thylbenzene	624	100-41-4	10	< 10
ethylene Chloride	624	75-09-2	10	< 10
,1,2,2-Tetrachloroethane	624	79-34-5	10	< 10
etrachloroethylene	624	127-18-4	10	< 10
oluene	624	108-88-3	10	< 10
,1,1-Trichloroethane	624	71-55-6	10	< 10
,1,2-Trichloroethane	624	79-00-5	10	< 10
richloroethylene	624	79-01-6	10	< 10
richlorofluoromethane	624	-	10	< 10
inyl chloride	624	75-01-4	10	< 10
2-butanone	-	-	-	Present

< = Less than, None detected

NEW YORK TESTING LABORATORIES, INC.

 Sample: RO-49-04 Lab No. 82-64452 (A-1

30' - 32'

'OLATILE COMPOUNDS

'arameter (µg/l):	Method No.	CAS No.	Detection Limit (µg/l)	Found (µg/l)
·crolein	603, 624	107-02-8	100	< 100
·crylonitrile	603, 624	107-13-1	100	< 100
3enzene	624	71-43-2	10	< 10
3romodichloromethane	624	75-27-4	10	< 10
3romoform	624	75-25-2	10	< 10
3romomethane	624	74-83-9	10	< 10
Carbon Tetrachloride	624	56-23-5	10	< 10
Chlorobenzene	624	108-90-7	10	< 10
Chlorodibromomethane	624	124-48-1	10	< 10
Chloroethane	624	75-00-3	10	< 10
2-Chloroethyl vinyl ether	624	110-75-8	10	< 10
Chloroform	624	67-66-3	10	< 10
Chloromethane	624	74-87-3	10	< 10
Dichlorodifluoromethane	624	-	10	< 10
1,1-Dichloroethane	624	75-34-3	10	< 10
1,2-Dichloroethane	624	107-06-2	10	< 10
1,1-Dichloroethylene	624	75-35-4	10	< 10
Trans, 1,2-Dichloroethylene	624	156-60-5	10	< 10
1,2-Dichloropropane	624	78-87-5	10	< 10
1,3-Dichloropropene	624	10061-02-6	10	< 10
Ethylbenzene	624	100-41-4	10	< 10
Methylene Chloride	624	75-09-2	10	< 10
1,1,2,2-Tetrachloroethane	624	79-34-5	10	< 10
Tetrachloroethylene	624	127-18-4	10	< 10
Toluene	624	108-88-3	10	< 10
1,1,1-Trichloroethane	624	71-55-6	10	< 10
1,1,2-Trichloroethane	624	79-00-5	10	< 10
Trichloroethylene	624	79-01-6	10	< 10
Trichlorofluoromethane	624	-	10	< 10
Vinyl chloride	624	75-01-4	10	< 10
2-butanone	-	-		Present

< = Less than, None detected

 Sample: RO-49-05 Lab No. 82-64452 (A-1

20'-22'

LATILE COMPOUNDS rameter (µg/l):	Method No.	CAS No.	Detection Limit (µg/l)	Found (µg/l)
rolein	603, 624	107-02-8	100	< 100
rylonitrile	603, 624	107-13-1	100	< 100
nzene	624	71-43-2	10	< 10
romodichloromethane	624	75-27-4	10	< 10
romoform	624	75-25-2	10	< 10
romomethane	624	74-83-9	10	< 10
arbon Tetrachloride	624	56-23-5	10	< 10
hlorobenzene	624	108-90-7	10	< 10
hlorodibromomethane	624	124-48-1	10	< 10
hloroethane	624	75-00-3	10	< 10
-Chloroethyl vinyl ether	624	110-75-8	10	< 10
Chloroform	624	67-66-3	10	< 10
Chloromethane	624	74-87-3	10	< 10
Dichlorodifluoromethane	624	-	10	< 10
1,1-Dichloroethane	624	75-34-3	10	< 10
1,2-Dichloroethane	624	107-06-2	10	< 10
1,1-Dichloroethylene	624	75-35-4	10	< 10
Trans, 1,2-Dichloroethylene	624	156-60-5	10	< 10
1,2-Dichloropropane	624	78-87-5	10	< 10
1,3-Dichloropropene	624	10061-02-6	10	< 10
Ethylbenzene	624	100-41-4	10	< 10
Methylene Chloride	624	75-09-2	10	< 10
1,1,2,2-Tetrachloroethane	624	79-34-5	10	< 10
Tetrachloroethylene	624	127-18-4	10	< 10
Toluene	624	108-88-3	10	< 10
1,1,1-Trichloroethane	624	71-55-6	10	< 10
1,1,2-Trichloroethane	624	79-00-5	10	< 10
Trichloroethylene	624	79-01-6	10	< 10
Trichlorofluoromethane	624	-	10	< 10
Vinyl chloride	624	75-01-4	10	< 10
2-butanone	-	-	-	Present
2,4-dimethyl-3-pentanone	-	-	-	Present

< = Less than, None detected

NEW YORK TESTING LABORATORIES, INC.

Page 24. Sample: RO-51-02 Lab No. 82-64452 (A-1)

50'-52'

TILE COMPOUNDS

meter (µg/l):	Method No.	CAS No.	Detection Limit (µg/l)	Found (µg/l)
)lein	603, 624	107-02-8	100	< 100
/lonitrile	603, 624	107-13-1	100	< 100
zene	624	71-43-2	10	< 10
nodichloromethane	624	75-27-4	10	< 10
moform	624	75-25-2	10	< 10
momethane	624	74-83-9	10	< 10
bon Tetrachloride	624	56-23-5	10	< 10
orobenzene	624	108-90-7	10	< 10
orodibromomethane	624	124-48-1	10	< 10
oroethane	624	75-00-3	10	< 10
Chloroethyl vinyl ether	624	110-75-8	10	< 10
loroform	624	67-66-3	10	< 10
loromethane	624	74-87-3	10	< 10
chlorodifluoromethane	624	-	10	< 10
1-Dichloroethane	624	75-34-3	10	< 10
2-Dichloroethane	624	107-06-2	10	< 10
1-Dichloroethylene	624	75-35-4	10	< 10
ans, 1,2-Dichloroethylene	624	156-60-5	10	< 10
,2-Dichloropropane	624	78-87-5	10	< 10
,3-Dichloropropene	624	10061-02-6	10	< 10
thylbenzene	624	100-41-4	10	< 10
ethylene Chloride	624	75-09-2	10	< 10
,1,2,2-Tetrachloroethane	624	79-34-5	10	< 10
etrachloroethylene	624	127-18-4	10	< 10
oluene	624	108-88-3	10	< 10
,1,1-Trichloroethane	624	71-55-6	10	< 10
,1,2-Trichloroethane	624	79-00-5	10	< 10
richloroethylene	624	79-01-6	10	< 10
richlorofluoromethane	624	-	10	< 10
inyl chloride	624	75-01-4	10	< 10
Hexane	-	-	-	Present

< = Less than, None detected

NEW YORK TESTING LABORATORIES, INC.

 Sample: RO-51-03 Lab No. 82-64452 (A-1)

40'-42'

ATILE COMPOUNDS ameter (µg/1):	Method No.	CAS No.	Detection Limit (µg/1)	Found (µg/1)
olein	603, 624	107-02-8	100	< 100
ylonitrile	603, 624	107-13-1	100	< 100
ızene	624	71-43-2	10	< 10
omodichloromethane	624	75-27-4	10	< 10
omoform	624	75-25-2	10	< 10
omomethane	624	74-83-9	10	< 10
rbon Tetrachloride	624	56-23-5	10	< 10
lorobenzene	624	108-90-7	10	< 10
ılorodibromomethane	624	124-48-1	10	< 10
ıloroethane	624	75-00-3	10	< 10
-Chloroethyl vinyl ether	624	110-75-8	10	< 10
hloroform	624	67-66-3	10	< 10
hloromethane	624	74-87-3	10	< 10
ichlorodifluoromethane	624	-	10	< 10
,1-Dichloroethane	624	75-34-3	10	< 10
,2-Dichloroethane	624	107-06-2	10	< 10
,1-Dichloroethylene	624	75-35-4	10	< 10
rans, 1,2-Dichloroethylene	624	156-60-5	10	< 10
1,2-Dichloropropane	624	78-87-5	10	< 10
1,3-Dichloropropene	624	10061-02-6	10	< 10
Ethylbenzene	624	100-41-4	10	< 10
[redacted]				
1,1,2,2-Tetrachloroethane	624	79-34-5	10	< 10
Tetrachloroethylene	624	127-18-4	10	< 10
Toluene	624	108-88-3	10	< 10
1,1,1-Trichloroethane	624	71-55-6	10	< 10
1,1,2-Trichloroethane	624	79-00-5	10	< 10
Trichloroethylene	624	79-01-6	10	< 10
Trichlorofluoromethane	624	-	10	< 10
Vinyl chloride	624	75-01-4	10	< 10
Carbon Disulfide	-	-	-	Present
2,4-dimethyl-3-pentanone	-	-	-	Present

< = Less than, None detected

NEW YORK TESTING LABORATORIES, INC.

Page 26. Sample: RO-51-04 **Lab No.** 82-64452 (A-1)

30'-32'

LATILE COMPOUNDS

rameter (µg/1):	Method No.	CAS No.	Detection Limit (µg/1)	Found (µg/1)
rolein	603, 624	107-02-8	100	< 100
rylonitrile	603, 624	107-13-1	100	< 100
enzene	624	71-43-2	10	< 10
romodichloromethane	624	75-27-4	10	< 10
romoform	624	75-25-2	10	< 10
romomethane	624	74-83-9	10	< 10
arbon Tetrachloride	624	56-23-5	10	< 10
hlorobenzene	624	108-90-7	10	< 10
hlorodibromomethane	624	124-48-1	10	< 10
hloroethane	624	75-00-3	10	< 10
2-Chloroethyl vinyl ether	624	110-75-8	10	< 10
Chloroform	624	67-66-3	10	< 10
Chloromethane	624	74-87-3	10	< 10
Dichlorodifluoromethane	624	-	10	< 10
1,1-Dichloroethane	624	75-34-3	10	< 10
1,2-Dichloroethane	624	107-06-2	10	< 10
1,1-Dichloroethylene	624	75-35-4	10	< 10
Trans, 1,2-Dichloroethylene	624	156-60-5	10	< 10
1,2-Dichloropropane	624	78-87-5	10	< 10
1,3-Dichloropropene	624	10061-02-6	10	< 10
Ethylbenzene	624	100-41-4	10	< 10
[redacted]				
1,1,2,2-Tetrachloroethane	624	79-34-5	10	< 10
Tetrachloroethylene	624	127-18-4	10	< 10
Toluene	624	108-88-3	10	< 10
1,1,1-Trichloroethane	624	71-55-6	10	< 10
1,1,2-Trichloroethane	624	79-00-5	10	< 10
Trichloroethylene	624	79-01-6	10	< 10
Trichlorofluoromethane	624	-	10	< 10
Vinyl chloride	624	75-01-4	10	< 10

< = Less than, None detected

NEW YORK TESTING LABORATORIES, INC.

Page 27. Sample: RO-51-05 Lab No. 82-64452 (A-1)

20'-22'

ATILE COMPOUNDS ameter (µg/1):	Method No.	CAS No.	Detection Limit (µg/1)	Found (µg/1)
olein	603, 624	107-02-8	100	< 100
ylonitrile	603, 624	107-13-1	100	< 100
zene	624	71-43-2	10	< 10
modichloromethane	624	75-27-4	10	< 10
omoform	624	75-25-2	10	< 10
omomethane	624	74-83-9	10	< 10
rbon Tetrachloride	624	56-23-5	10	< 10
lorobenzene	624	108-90-7	10	< 10
lorodibromomethane	624	124-48-1	10	< 10
loroethane	624	75-00-3	10	< 10
Chloroethyl vinyl ether	624	110-75-8	10	< 10
loroform	624	67-66-3	10	< 10
loromethane	624	74-87-3	10	< 10
ichlorodifluoromethane	824	-	10	< 10
,1-Dichloroethane	624	75-34-3	10	< 10
,2-Dichloroethane	624	107-06-2	10	< 10
,1-Dichloroethylene	624	75-35-4	10	< 10
rans, 1,2-Dichloroethylene	624	156-60-5	10	< 10
,2-Dichloropropane	624	78-87-5	10	< 10
,3-Dichloropropene	624	10061-02-6	10	< 10
Ethylbenzene	624	100-41-4	10	< 10
[redacted]				
1,1,2,2-Tetrachloroethane	624	79-34-5	10	< 10
Tetrachloroethylene	624	127-18-4	10	< 10
Toluene	624	108-88-3	10	< 10
1,1,1-Trichloroethane	624	71-55-6	10	< 10
1,1,2-Trichloroethane	624	79-00-5	10	< 10
Trichloroethylene	624	79-01-6	10	< 10
Trichlorofluoromethane	624	-	10	< 10
Vinyl chloride	624	75-01-4	10	< 10

< = Less than, None detected

NEW YORK TESTING LABORATORIES, INC.

60' - 62'

LATILE COMPOUNDS

rameter (ug/l)	Method No.	CAS No.	Detection Limit (ug/l)	Found (ug/l)
[redacted]	-	-	-	Present
[redacted]	-	-	-	Present
[redacted]	-	-	-	Present
[redacted]	-	-	-	Present
[redacted]	-	-	-	Present
[redacted]	-	-	-	Present
[redacted]	-	-	-	Present

NEW YORK TESTING LABORATORIES, INC.

Page 32. Sample: RO-50-03 **Lab No.** 82-64452 (A-1)

40'-42'

LE COMPOUNDS ter (µg/1):	Method No.	CAS No.	Detection Limit (µg/1)	Found (µg/1)
ein	603, 624	107-02-8	100	< 100
onitrile	603, 624	107-13-1	100	< 100
ne	624	71-43-2	10	< 10
dichloromethane	624	75-27-4	10	< 10
form	624	75-25-2	10	< 10
methane	624	74-83-9	10	< 10
on Tetrachloride	624	56-23-5	10	< 10
robenzene	624	108-90-7	10	< 10
rodibromomethane	624	124-48-1	10	< 10
roethane	624	75-00-3	10	< 10
loroethyl vinyl ether	624	110-75-8	10	< 10
roform	624	67-66-3	10	< 10
romethane	624	74-87-3	10	< 10
lorodifluoromethane	624	-	10	< 10
-Dichloroethane	624	75-34-3	10	< 10
-Dichloroethane	624	107-06-2	10	< 10
-Dichloroethylene	624	75-35-4	10	< 10
ns, 1,2-Dichloroethylene	624	156-60-5	10	< 10
-Dichloropropane	624	78-87-5	10	< 10
3-Dichloropropene	624	10061-02-6	10	< 10
ylbenzene	624	100-41-4	10	< 10
[redacted]				
1,2,2-Tetrachloroethane	624	79-34-5	10	< 10
trachloroethylene	624	127-18-4	10	< 10
luene	624	108-88-3	10	< 10
1,1-Trichloroethane	624	71-55-6	10	< 10
1,2-Trichloroethane	624	79-00-5	10	< 10
ichloroethylene	624	79-01-6	10	< 10
richlorofluoromethane	624	-	10	< 10
inyl chloride	624	75-01-4	10	< 10
exane	-	-	-	Present
,4-dimethyl-3-pentanone	-	-	-	Present

< = Less than, None detected

60'-62'

)LATILE COMPOUNDS

ırameter (ug/l)	Method No.	CAS No.	Detection Limit (ug/l)	Found (ug/l)
:etone	-	-	-	Present
iethyl ether	-	-	-	Present
exane	-	-	-	Present
-methyl-3-pentanone	-	-	-	Present
,4-dimethyl-3-pentanone	-	-	-	Present

REFERENCE NO. 11

R. Allan Freeze

Department of Geological Sciences
University of British Columbia
Vancouver, British Columbia

John A. Cherry

Department of Earth Sciences
University of Waterloo
Waterloo, Ontario

GROUNDWATER

Prentice-Hall, Inc.
Englewood Cliffs, New Jersey 07632

Library of Congress Cataloging in Publication Data

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ISBN 0-13-365312-9

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Table 2.2 Range of Values of Hydraulic Conductivity and Permeability

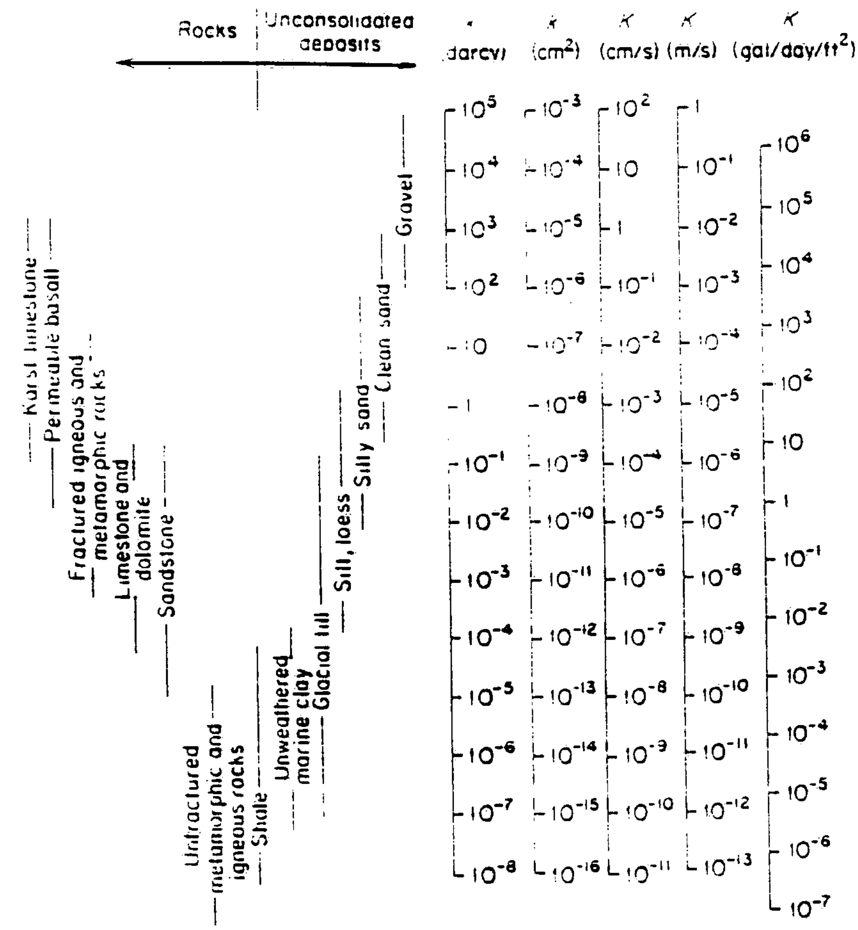


Table 2.3 Conversion Factors for Permeability and Hydraulic Conductivity Units

	Permeability, k*			Hydraulic conductivity, K		
	cm²	ft²	darcy	m/s	ft/s	U.S. gal/day/ft²
cm²	1	1.08×10^{-3}	1.01×10^{8}	9.80×10^{2}	3.22×10^{3}	1.85×10^{9}
ft²	9.29×10^{2}	1	9.42×10^{10}	9.11×10^{5}	2.99×10^{6}	1.71×10^{12}
darcy	9.87×10^{-9}	1.06×10^{-11}	1	9.66×10^{-6}	3.17×10^{-5}	1.82×10^{1}
m/s	1.02×10^{-3}	1.10×10^{-6}	1.04×10^{5}	1	3.28	2.12×10^{6}
ft/s	3.11×10^{-4}	3.35×10^{-7}	3.15×10^{4}	3.05×10^{-1}	1	6.46×10^{5}
U.S. gal/day/ft²	5.42×10^{-10}	5.83×10^{-13}	5.49×10^{-2}	4.72×10^{-7}	1.55×10^{-6}	1

*To obtain k in ft², multiply k in cm² by 1.08×10^{-3}.

REFERENCE NO. 12

MITRE

26 May 1988
W52-219

Ms. Lucy Sibold
U.S. Environmental Protection Agency
401 M Street, S.W.
Room 2636, Mail Code WH-548A
Washington, D.C. 20460

Dear Ms. Sibold:

Enclosed is a copy of the draft revised HRS net precipitation values for 3,345 weather stations where data were available. The data are presented by state code, station name, latitude, longitude, and net precipitation in inches. A list of state codes is also enclosed.

The net precipitation values are provided to assist the Phase II - Field Testing efforts. It is suggested that the value from the nearest weather station in a similar geographic setting be used as the net precipitation value for a site.

If there are any questions regarding this material, please contact Dave Egan at (703) 883-7866.

Sincerely,

Andrew M. Platt
Group Leader
Hazardous Waste Systems

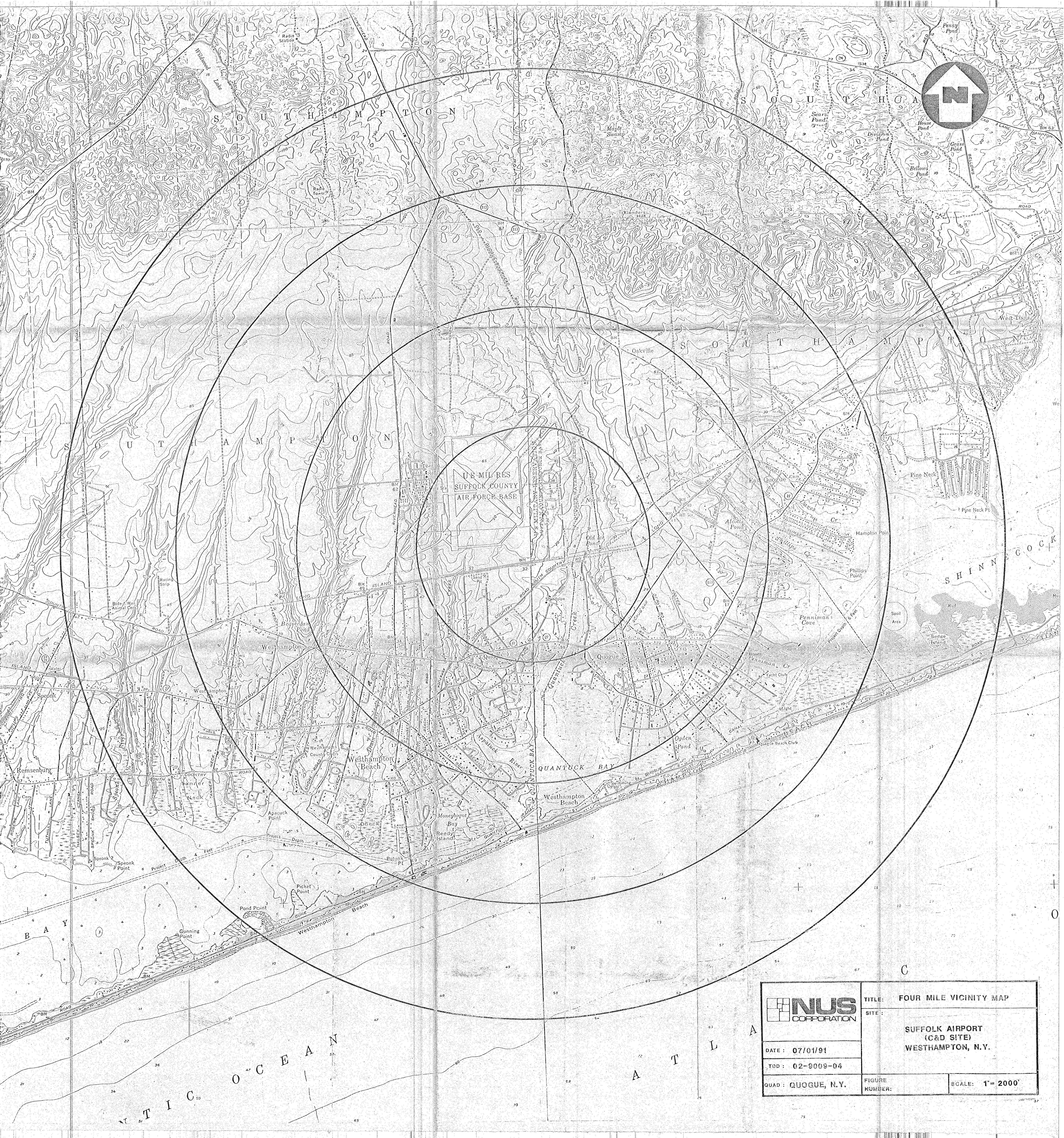
AMP:DEE/hms

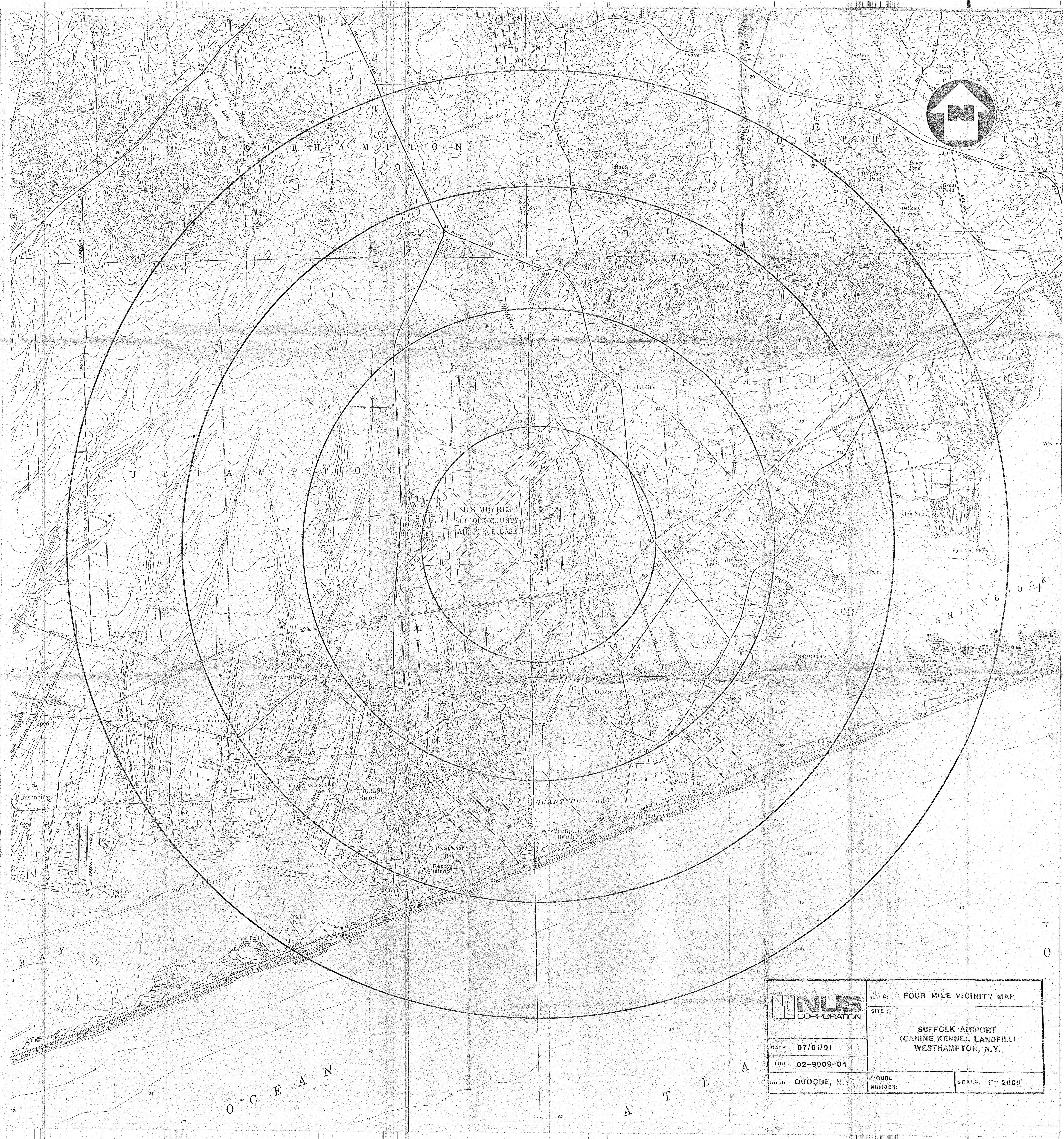
Enclosures

cc: Scott Parrish

OBS	STATE	NAME				
1871	29	LOS ALAMOS		35.52	106.19	3.4323
1872	29	AMISTAD 1 SSW		35.54	103.10	0.4029
1873	29	ROY		35.57	104.12	0.8208
1874	29	WOLF CANYON		35.58	106.46	7.9176
1875	29	CUBA		36.02	106.58	3.3220
1876	29	CHACO CANYON NAT MON		36.02	107.54	1.6283
1877	29	PASAMONTE		36.18	103.44	0.6540
1878	29	SPRINGER		36.23	104.36	0.9134
1879	29	CLAYTON WSO	R	36.27	103.09	0.4587
1880	29	CIMARRON		36.31	104.55	0.9582
1881	29	EAGLE NEST		36.33	105.16	3.4400
1882	29	GRENVILLE		36.36	103.37	0.7293
1883	29	EL VADO DAM		36.36	106.44	4.2724
1884	29	BLOOMFIELD 3 SE		36.40	107.58	1.6665
1885	29	RED RIVER		36.42	105.24	6.5349
1886	29	FRUITLAND 2 E		36.44	108.21	1.7307
1887	29	DES MOINES		36.45	103.50	1.4617
1888	29	CERRO 4 NE		36.49	105.35	2.5022
1889	29	AZTEC RUINS NAT MON		36.50	108.00	2.5060
1890	29	CHAMA		36.55	106.35	7.9954
1891	29	LAKE MALOYA		36.59	104.22	6.5991
1892	30	NY WESTERLEIGH STAT IS		40.36	74.10	21.6651
1893	30	NEW YORK JFK INTL AP		40.39	73.47	19.0931
1894	30	MINEOLA	R	40.44	73.38	21.4240
1895	30	NEW YORK LA GUARDIA WSO		40.46	73.54	19.3035
1896	30	NEW YORK CNTRL PK WSO		40.47	73.58	20.3698
1897	30	PATCHOGUE 2 N		40.48	73.01	23.7759
1898	30	BRIDGEHAMPTON		40.57	72.18	25.0065
1899	30	RIVERHEAD RESEARCH		40.58	72.43	23.0994
1900	30	SETAUKET		40.58	73.06	22.4342
1901	30	SCARSDALE		40.59	73.48	23.5676
1902	30	DOBBS FERRY		41.01	73.52	25.7776
1903	30	WEST POINT		41.23	73.58	25.3622
1904	30	PORT JERVIS		41.23	74.41	20.2989
1905	30	CARMEL 1 SW		41.25	73.42	23.9528
1906	30	GLENHAM		41.31	73.56	20.2757
1907	30	POUGHKEEPSIE FAA AP		41.38	73.53	18.7671
1908	30	MOHONK LAKE		41.46	74.09	24.9201
1909	30	LIBERTY		41.48	74.45	27.4126
1910	30	MILLBROOK		41.51	73.37	18.9681
1911	30	ELMIRA		42.06	76.49	13.5705
1912	30	ALLEGANY STATE PARK		42.06	78.45	22.0001
1913	30	SPENCER 3 W		42.12	76.34	17.6526
1914	30	BINGHAMTON WSO	R	42.13	75.59	16.8007
1915	30	ALFRED		42.15	77.48	16.5521
1916	30	LITTLE VALLEY		42.15	78.48	27.7659
1917	30	WESTFIELD 3 SW		42.17	79.37	20.7292
1918	30	BAINBRIDGE		42.18	75.29	19.2523
1919	30	ANGELICA		42.18	78.01	14.2349
1920	30	FRANKLINVILLE		42.21	78.27	19.6155
1921	30	FREDONIA		42.25	79.18	17.2706
1922	30	ITHACA CORNELL UNIV. //		42.27	76.27	14.9113
1923	30	ALCOVE DAM		42.28	73.56	18.7429
1924	30	NORWICH 1 NE		42.32	75.30	20.0825
1925	30	DANSVILLE		42.34	77.42	11.5336

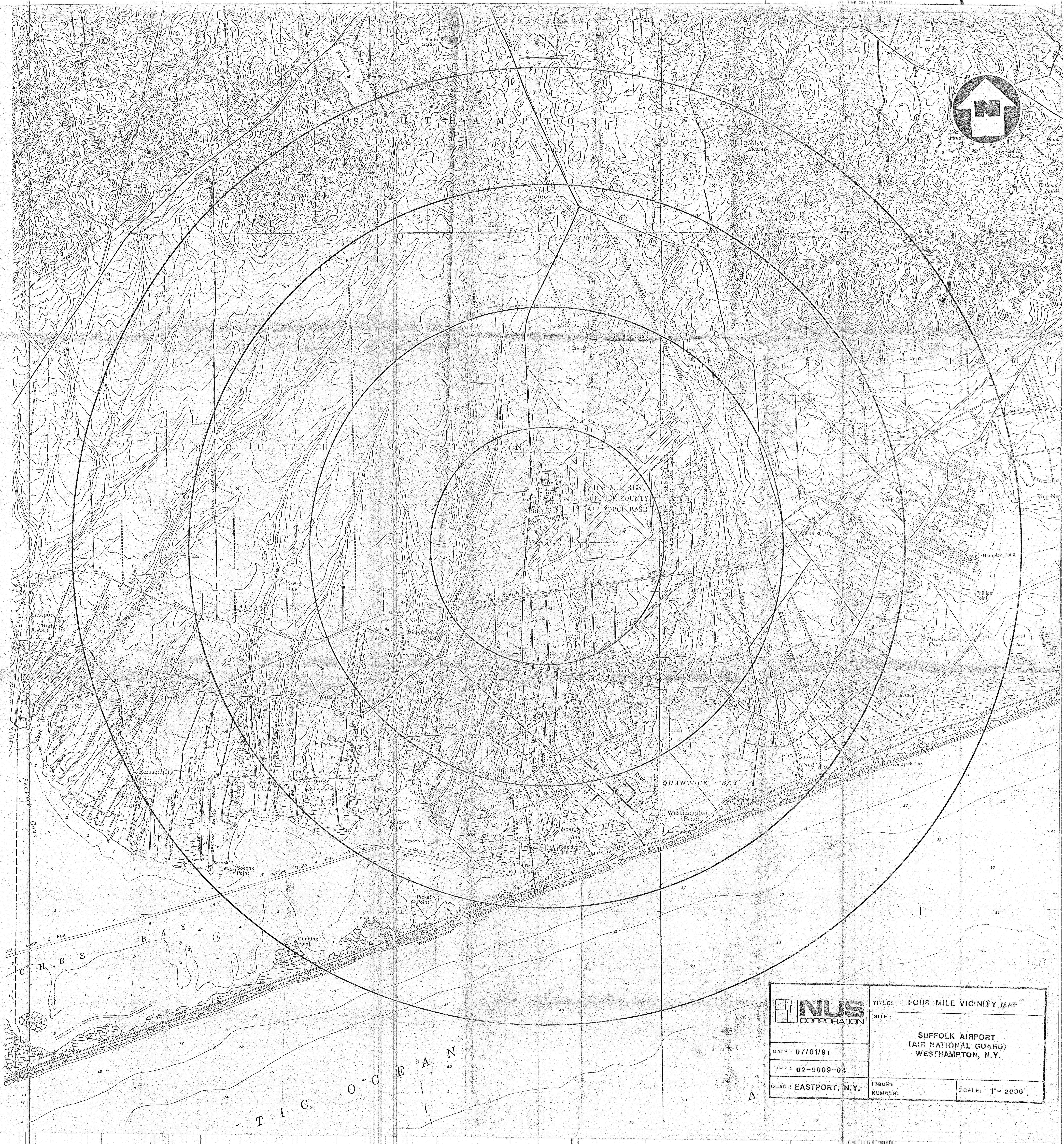
REFERENCE NO. 13


NUS CORPORATION
TITLE: FOUR MILE VICINITY MAP
SITE: SUFFOLK AIRPORT (C&D SITE) WESTHAMPTON, N.Y.
DATE: 07/01/91
TDD: 02-9009-04
QUAD: QUOGUE, N.Y.
FIGURE NUMBER:
SCALE: 1" = 2000'
U S MIL RES
SUFFOLK COUNTY
AIR FORCE BASE
SOUTHAMPTON
Westhampton
Westhampton Beach
Quogue
East Quogue
Oakville
Remsenburg
Speonk
QUANTUCK BAY
SHINNECOCK
ATLANTIC OCEAN

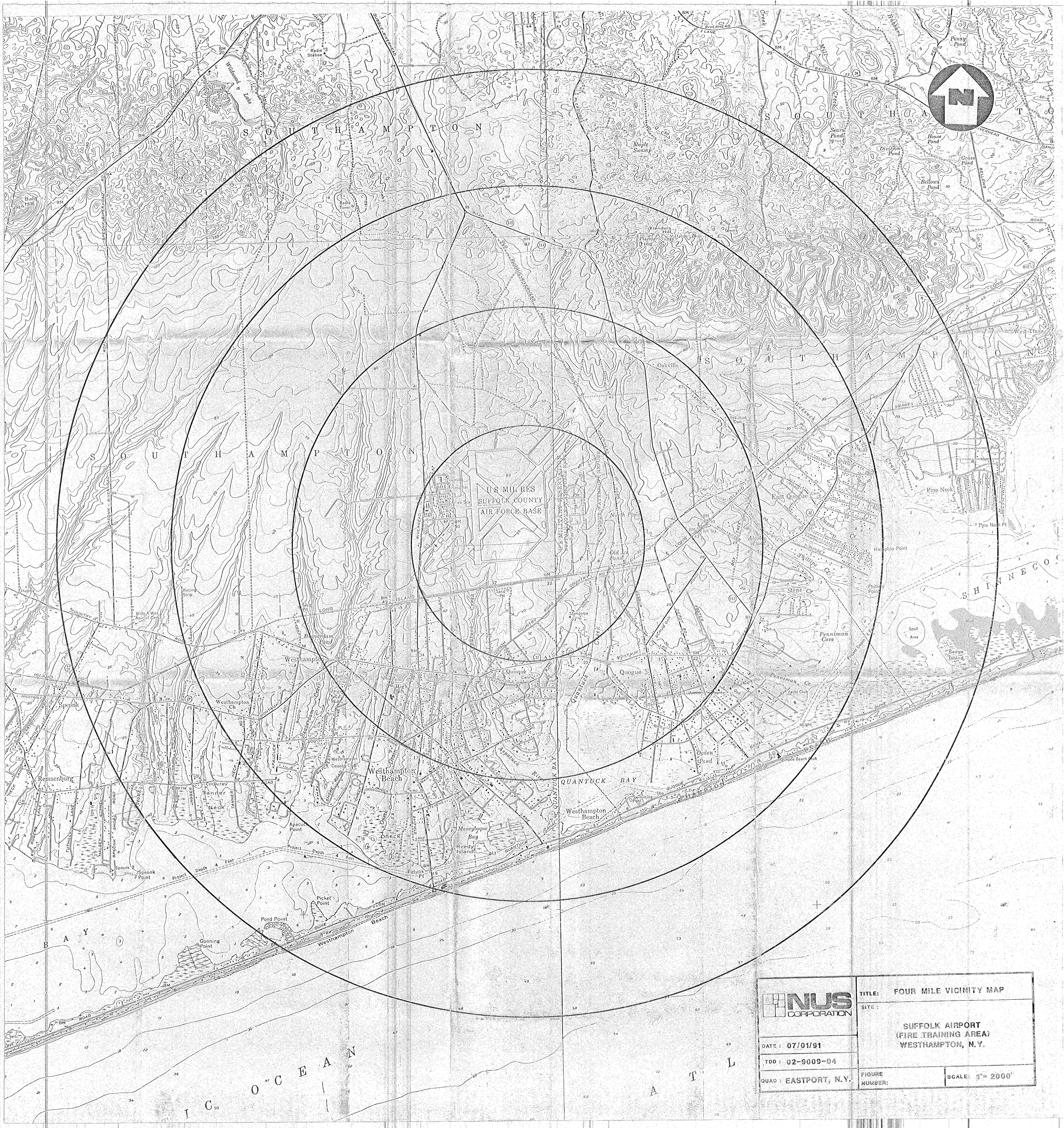


NUS CORPORATION

TITLE:	FOUR MILE VICINITY MAP
SITE:	SUFFOLK AIRPORT (CANINE KENNEL LANDFILL) WESTHAMPTON, N.Y.
DATE:	07/01/91
TDD:	02-9009-04
QUAD:	QUOGUE, N.Y.
FIGURE NUMBER:	
SCALE:	1"= 2000'



SOUTHAMPTON
U.S. MIL RES
SUFFOLK COUNTY
AIR FORCE BASE
Westhampton
Westhampton Beach
Quogue
East Quogue
Quiogue
Speonk
Remsenburg
Eastport
Oakville
QUANTUCK BAY
Moneybogue Bay
Maple Swamp
Beaverdam Pond
Speonk Point
Apacuck Point
Picket Point
Pond Point
Gunning Point
Tanner Neck
Penniman's Cove
Phillips Point
Hampton Point
ATLANTIC OCEAN
NUS CORPORATION
TITLE: FOUR MILE VICINITY MAP
SITE :
SUFFOLK AIRPORT
(AIR NATIONAL GUARD)
WESTHAMPTON, N.Y.
DATE : 07/01/91
TDD : 02-9009-04
QUAD : EASTPORT, N.Y.
FIGURE NUMBER:
SCALE: 1"= 2000'



NUS CORPORATION	TITLE: FOUR MILE VICINITY MAP
DATE: 07/01/91	SITE: SUFFOLK AIRPORT (FIRE TRAINING AREA) WESTHAMPTON, N.Y.
TDD: 02-9009-04	
QUAD: EASTPORT, N.Y.	FIGURE NUMBER:
	SCALE: 1" = 2000'

REFERENCE NO. 14

NUS CORPORATION AND SUBSIDIARIES

TELECON NOTE

CONTROL NO	DATE	TIME
02-9009-04	5/9/91	1050

DISTRIBUTION

Suffolk Airport C+D Site

BETWEEN	OF	PHONE
Mr. Latrenta	Suffolk Airport Aviation Division	(516) 288-3600
AND		
J. Torchia		

DISCUSSION (NUS)

Obtained Block and Lot numbers from Mr. Latrenta. Numbers pertain to the entire Airport, not the C+D site specifically.

Block # - 01.00 Lot # - 001.000

Since the airport is such a large parcel, I inquired about where the majority of work is done. Mr. Latrenta stated that most of the work is located on the western portion of the airport. However, sections of the airport near the Canine Kennel area are being leased out to private businesses in the area.

An area is being used as boat storage for a private business.

An awning manufacturer is using a building east of the Kennel to store equipment associated with manufacturing awnings.

Another building is being used to store auto supply's for a private business.

ACTION ITEMS:

JT

REFERENCE NO. 15

NUS CORPORATION AND SUBSIDIARIES

TELECON NOTE

CONTROL NO: 02-9009-04

DATE: 4/24/91

TIME: 1630

DISTRIBUTION:

Suffolk Airport C+D Site

BETWEEN: Mrs Mansey

OF: Suffolk County (Westhampton) Water Authority

PHONE: 516 (589) 5200

AND: Joanne Torchia (NUS)

DISCUSSION:

Mrs Mansey returned my call with information regarding population on public supply wells.

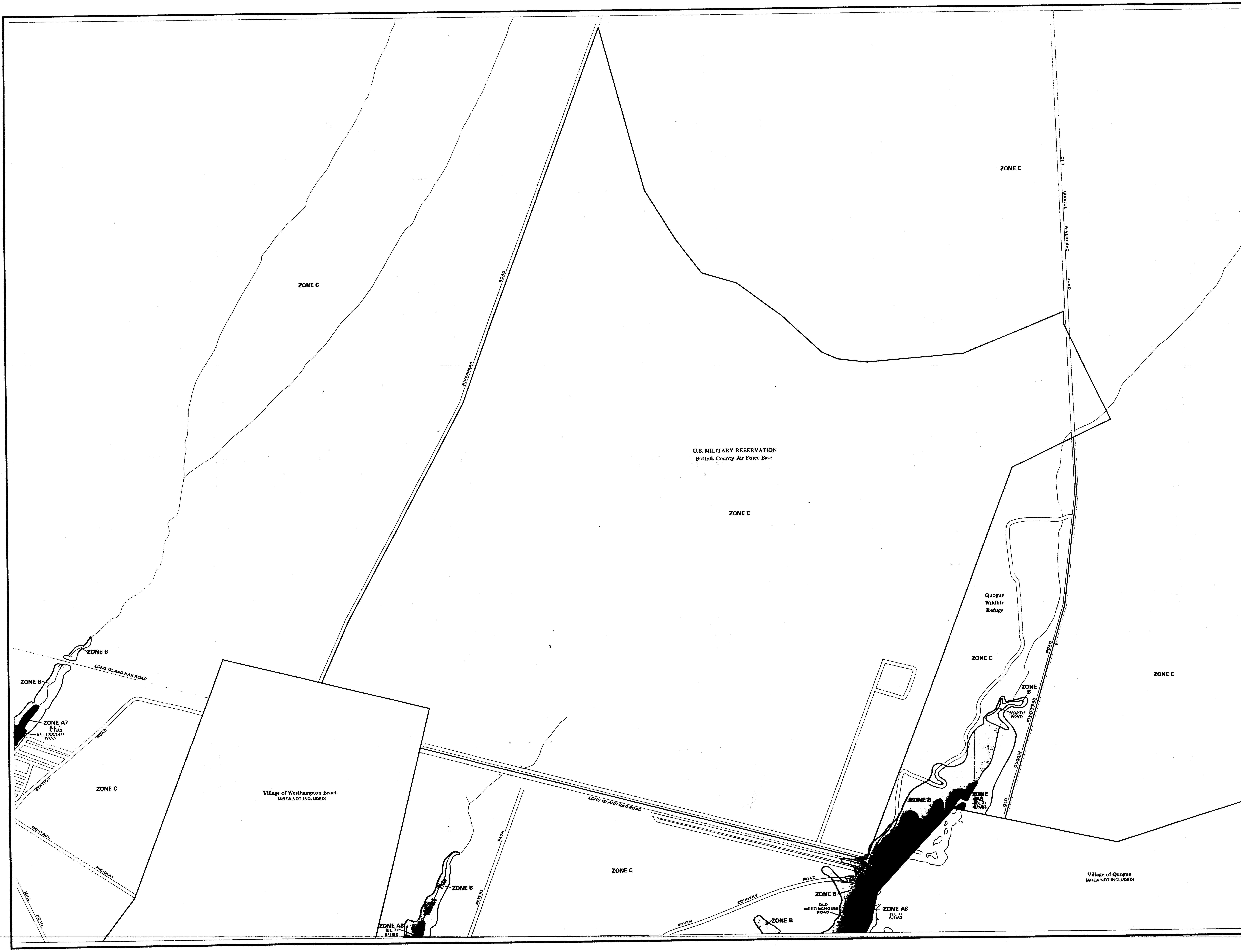
Both well fields, Quique and Hampton Bay are owned by the Suffolk County Water Authority (SCWA). These two well fields are located within 1.5 miles downgradient of Suffolk Airport.

The entire population served by the two well fields within a 4-mile radius is 2,489 people.

ACTION ITEMS:

JT

REFERENCE NO. 16



KEY TO MAP

500-Year Flood Boundary	ZONE B
100-Year Flood Boundary	
Zone Designations* With Date of Identification e.g., 12/2/74	
100-Year Flood Boundary	
500-Year Flood Boundary	ZONE B
Base Flood Elevation Line With Elevation In Feet**	513
Base Flood Elevation in Feet Where Uniform Within Zone**	(EL 987)
Elevation Reference Mark	RM7×
Zone D Boundary	
River Mile	•M1.5

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
A0	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

Coastal base flood elevations shown on this map include the effects of wave action.

Coastal base flood elevations apply only landward of the shoreline shown on this map.

INITIAL IDENTIFICATION:
SEPTEMBER 28, 1973
FLOOD HAZARD BOUNDARY MAP REVISIONS:
NONE

FLOOD INSURANCE RATE MAP EFFECTIVE:
SEPTEMBER 28 1973
FLOOD INSURANCE RATE MAP REVISIONS:

July 1, 1974-to change zone designations

September 3, 1976-to reflect Curvilinear flood boundary and add special flood hazard areas

June 1, 1983-to include the effects of wave action.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE
500 0 500 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF SOUTHAMPTON, NEW YORK SUFFOLK COUNTY

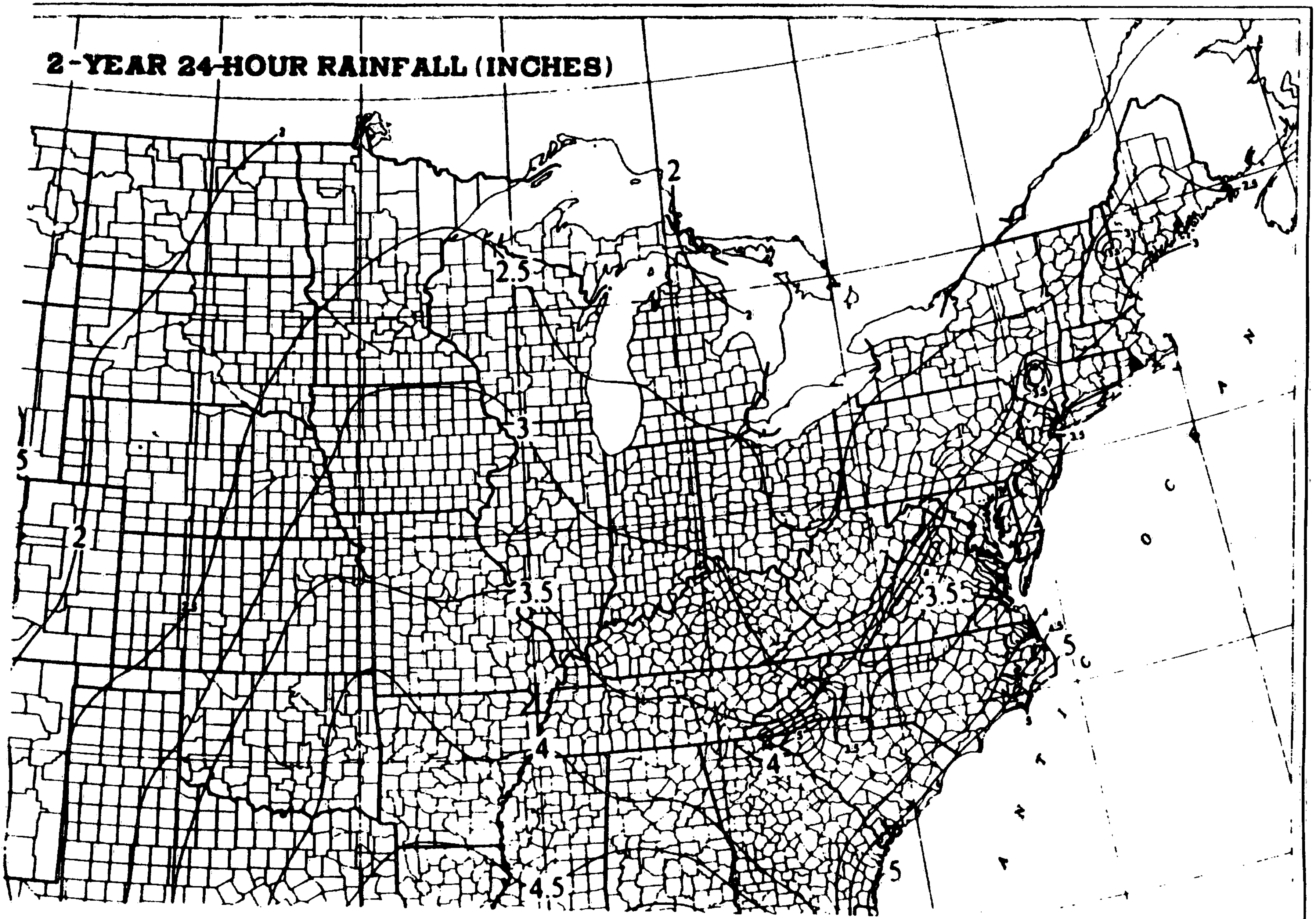
PANEL 24 OF 41
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
365342 0024 C

MAP REVISED:
JUNE 1, 1983

Federal Emergency Management Agency

REFERENCE NO. 17


2-YEAR 24-HOUR RAINFALL (INCHES)
2
2.5
3
3.5
4
4.5
5

REFERENCE NO. 18

NUS CORPORATION

II

0714

SUFFOLK AIRPORT C+D SITE
02-9008-04
TDD MANAGER-J. TORCHIA
LOGBOOK #0714
JANUARY 15, 1991

Purpose

- Serves to document onsite activities and be understandable to an outside reader.
- Provides the basis for later written reports.
- Used as an evidentiary document and may be used in legal proceedings

Distribution

- Controlled by the project manager and distributed as appropriate to personnel designated by the project manager.

General Procedures

- Record information in language which is objective and factual
- Use ink. Waterproof ink is recommended.
- Leave first two pages blank. They serve as space for the table of contents to be added when the log book is complete.
- The first written page identifies the date, time, TDD number, site name, location, NUS personnel and their responsibilities, other non-NUS personnel and observed weather conditions.
- Start on a new page at the start of each day's field activities. This page should identify date, time, TDD number, site name and location, NUS personnel and their responsibilities, other non-NUS personnel and observed weather conditions.
- List all persons leaving or entering the site.
- Information recorded in the log book should be in chronological order.
- Sign and date each page, log all entries using a 24-hour clock. Entries should be time logged every 15 to 30 minutes.
- Corrections are to be lined through and initialed. No erroneous notes are to be made illegible.
- Include a sketch or map of the site which can be used to locate photo or sample locations. Note landmarks, indicate north, and if possible include an approximate scale. Include as many sketches and maps as necessary.
- A person not present when field activities were being documented should read each completed page, and countersign and date when satisfied that the written notes are understandable.

Specific Field Activities To Be Documented

- Record the who, what and where of field activities.
- Indicate sampling and photo locations on a site sketch or map.
- As part of the chain of custody procedure, recorded in-situ sampling information must include sample number, date, time, sampling personnel, sample type, designation of sample as a grab or composite, and any preservative used.
- Information for in-situ measurements must include a sample ID number, the date, time, and personnel taking measurements. Pertinent in-situ measurements include but are not limited to pH, temperature, conductivity, flow measurements, continuous air monitoring measurements, and stack gas analysis. If infield calculations are necessary they must be checked and signed by a second team member.
- Create a photo log to document photos taken in the field. These must include date, time, photographer, sample number, roll number, frame number, photo ID number and description. Indicate if the film is for slides or prints in the column for roll number. Photo ID numbers can be added at the time the photo log is assembled.
- Record onsite health and safety measures used. Describe observed potential hazards to health and safety. Document the level of protection used, decontamination procedure used and specific decontamination solutions.
- When sampling is complete, a summary log is to be completed. It must include date, time, sample number, description, field book reference page, and the number and date of the chain of custody from on which the sample is listed. Indicate whether or not the sample was split.
- Record details regarding relevant information obtained during onsite interviews. Include names of persons interviewed, the interest group represented, their address and phone number.
- Record any other relevant information which would be difficult to generate at a later date.

Suffolk Airport

02-9009-04
1/16/91

Anne [illegible]
2/22/91

[signature]
1/16/91

Suffolk Airport

02-9009-04
1/16/91

— TABLE OF CONTENTS —

Anne Garibaldi
2/22/91

1/16/91

Suffolk Airport

02-9009-04
1/16/91

[signature]
2/22/91

[signature]
1/16/91

Suffolk Airport C+D Site
Westhampton, NY

02-9009-04
1/16/91

— On-Site Reconnaissance —

NUS Personnel On Site:

Joanne Tomchio — SM — [signature]
John Reickhoff — SSO — [signature]
Tim Beauregard — Surveillance — Timothy Beauregard

The above personnel have read and understand the work plan and QA/QC procedures.

— Equipment Numbers On-Site —

Cameras (2) Prints — # 428512
Slides — # 731693
OVA — H # 469760 Field Ready - 1-15-91
HNU — H # 469746 Probe — 10.2
Minirad — # 428684
Compass — # 684180 — F

— Instrument Background Readings —

OVA — 0 ppm
HNU — 1 ~~0~~ ppm
Minirad — CPM - 10

[signature]
2/22/91

Joanne Tomchio
1/16/91

Suffolk Airport

02-9009-04
1/16/91

0930 — Arrived at upgradient well outside Airport grounds
Approx. .40 miles south of Sunrise highway and approx. 1.3 mile from the entrance to the Airport.
Opened well on level D - due to rain and venting holes on manhole cover. Plate on casing also vented therefore, no volitales.
Well # 548584 - Depth from flange to top of water level approx. 68'. Ground surface to top of casing - 2'.
Well 99' deep.

Photo of 1st well taken SSE at 100° P-1 S-1

1020 - Mr Smith (maintenance man), drove us to the C+D site area. He asked us if we had any question on the area of concern. He had absolutely no idea where the MW's could be.
Mr. Smith pointed at two entrance ways into the landfill area, one entrance being east of L.F and the other south.
The safest and more easily accessable entrance way we chose was the east entrance.
Mr. Smith could not answer any of our questions, ∴ he then proceded to leave the site.
We were on our own the remainder of the day.

0845 - Arrived at Health Deparment:
Spoke with Mr. Sy Robbins. We discussed MW information Mr. Robbins reviewed two reports on two areas of Airport; C+D Site and Fire Training area which may have a potential effect on the C+D area. He also provided me with information on the ~~exact~~ locations of the 3-MW downgradient of the C+D Site.

Anne Carnevale
2/22/91

1/16/91

Suffolk Airport

02-9009-04
1/16/91

Weather Conditions: Overcast Cloudy, Raining; Temp 50-55°; Wind from the East at 5-10 mph

1000 - Arrived on site

1020 - Met with Richard Smith
He indicated the location of the CHD site

1040 - Set up decon area
Air instruments turned on.

1110 - John Reickhoff holds H+S Meeting
Hazards - physical, holes pits, debris.

Initial walk around on level D due to rain. Uncapping wells performed on Level D if they are vented. Level B if rain stops JT

1115 - Team proceeding into landfill area. JT
Photo of entrance into landfill area
Entering in west at 270° - Photo taken at same location.
1P-2
1S-2

Photo of construction and Metallic debris
(Household goods, rubber tires,)
JT (drums, paint cans and
(Acid containers

1/16/91

Suffolk Airport

02-9009-04
1/16/91

1/16/91

2/22/91

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02-9009-04
1/16/91

1117 - Jogger noted running along road on east site of landfill.

1120 - Photo of mounds of debris - drums asphalt, concrete, lumber + household debris
photo taken at 270° west
1-P3
1S-3

No readings on OVA and HNU

1124 - Photos of drums taken south at 180°

1P-4
1S-4

1126 - Photos of clay-like materials (mounded) taken at 170° South

1P-5
1S-5

No readings on OVA and HNU

1135 - Panaramic View taken of entire landfill area
photo taken at 155° SSE.

1P-6+7
1S-6+7

[signature]
1/16/91

Suffolk Airport

02-9009-04
1/16/91

1140 - Photo of drums and ~~ex~~ household debris throughout trees along perimeter of landfill photos taken at 300° WNW
1P-8
1S-8

1142 - Photo of deteriorating drum
1P-9 Photo taken E at 90°
1S-9

1145 - Photo of a pathway leading out of landfill area. Where it leads is unknown
Photos taken SSW at 250°.
1P-10
1S-10

1150 - Photo of Shingles found in the middle of landfill
Photo ~~taken~~ at 90° East
1P-11
1S-11

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1/16/91

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2/22/91

Suffolk Airport

02-9009-04
1/16/91

1159 - Weather starting to change, beginning to rain heavy

Anne [illegible]
2/22/91

[illegible]
1/16/91

Suffolk Airport

02-9069-04
1/16/91

1155 - Photo of Oil Tank found in Middle of LF
Photo taken at 50° NE

1P - 12
1S - 12

1157 - Photo of some type of Shed/Awning
with other metallic debris
(Sheetrock, mattresses and lumber)
Photo taken at 240° SSW

1P-13
1S-13

No Readings on OVA and HNU

1200- Photo of fire extinguishing fluid in
Blue container
Photo taken at 90° East

1P-14
1S-14

[signature] 2/22/91

[signature] 1/16/91

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02-9009-04
1/16/91

1210 - HNU malfunctioned at the location of disposal of flare rockets. ←
Potential Cause: high humidity, rain water entering probe;
Left area immediately. SD

Anne Giancardi
2/22/91

1/16/91

Suffolk Airport

02-9009-04
1/16/91

1203 - Photo of Explosive Rocket containers, ~~5~~ 3/4 inch.
Photo taken at 115° ESE.

1P-15
1S-15 Reading of 5 ppms on HNU

1210 - HNU is indicating high readings
Pegging on 0 - 20
50 ppms on 0 - 200
No Readings on OVA.
Reading (high) in breathing zone area - Team has left area immediately

1214 - Team has now exited landfill area on the South side ~~of landfill~~

Winds have picked up
Rain has turned into a heavy ~~[illegible]~~ pour.

[signature] 2/22/91
[signature] 1/16/91

Suffolk Airport

02-9009-04
1/16/91

1220 - Team is walking along perimeters to look for monitoring wells

Maps indicate MW's are located SSW along perimeters of LF area and SSE

Wells are not indicative of information given.
Heading back to decon area

1230 - Team now back at decon area taking 5 minute break.

1240 - Team continues to look for MW
MW not visible
Cannot locate MW

1305 - Photo of proposed area of MW's
photo taken at 240° SW

1P-16
1S-16

1306 - Photo of proposed area of MW's
- Photo taken at ~~170°~~ 315° NW

1P-17
1S-17

1/16/91

2/13/91

Suffolk Airport

02-9004-04
1/16/91

1309 – Photo of proposed area of MW's
– Photo taken at 20° NNE

1R – 18
1S – 18

1320 – Leaving Site.

1335 – Proceeding to Wildlife Refuge.

1345 – Arrived at Wildlife Refuge;

Spoke with an older man, seemingly the manager of the Wildlife center.
He stated that there are no migriatory patterns of any species of birds at this time

There is Upland Sandpipers and Grasshopper Sparrows nesting on ~~the~~ and throughout The Airport.

Given Reference info.

Bob Delrea – 548-3056
Suffolk Co. Office of Ecology,
County Center, Riverhead.

[signature]
1/16/91

[signature]
2/22/91

Suffolk Airport

02-9009-04
1/16/91

Anne Garibaldi
2/22/91

[signature]
1/16/91

Suffolk Airport

02-9009-04
1/16/91

— Photo Log — Time

1P-1 - Photo of upgradient well taken at 150° SSE.
1S-1 — 0930

1P-2 - Photo of entrance into landfill area; Photo taken
1S-2 west at 270°; (Drums, paint cans, household debris,
rubber tires, etc.) — 1115

1P-3 - Photo of mounds of debris; drums, asphalt, concrete,
1S-3 lumber, and household debris - taken at 270° west. — 1120

1P-4 - Photo of drums taken at 180° south. — 1124
1S-4

1P-5 - Photo of a pile of clay-like materials taken
1S-5 at 170° south. — 1126

1P-6 +7 - Panaramic View of entire landfill area;
1S-6 +7 taken at 155° SSE — 1135

1P-8 - Photo of drums and household debris throughout
1S-8 trees along the perimeter of landfill. Photo
taken at 300° WNW. — 1140

1P-9 - Photo of a deteriorating drum taken
1S-9 at 90° East. — 1142

1P-10 - Photo of a sandy colored pathway leading out of
1S-10 landfill area; taken at 250° SSW. — 1145

[signature] 2/22/91

[signature] 1/16/91

02-9009-04
1/16/91

Suffolk Airport

— Photo Log Con't — Time

#		Time
1P-11 / 1S-11	Photo of shingles in the middle of the landfill; taken at 90° East.	1150
1P-12 / 1S-12	Photo of an Oil Tank lying adjacent to the shingles; taken at 50° NE.	1155
1P-13 / 1S-13	Photo of some type of Shed or Awning with other metallic debris (sheetrock, mattresses, and lumber) taken at 240° SSW.	1157
1P-14 / 1S-14	Photo of fire extinguishing fluid in a Blue Container; taken at 90° East.	1200
1P-15 / 1S-15	Photo of Explosive Rocket Containers approx. 2 3/4 inches in diameter; taken at 115° ESE.	1203
1P-16 / 1S-16	Photo of proposed area of MW; taken at 240° SW.	1305
1P-17 / 1S-17	Photo of proposed area of MW's; taken at 315° NW.	1306
1P-18 / 1S-18	Photo of proposed area of MW's; taken at 20° NNE.	1309

[signature]
1/16/91

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1/22/91

Suffolk Airport

02-9009-04
2/12/91

[illegible signature]
2/22/91

[illegible signature] 2/12/91

Suffolk Airport

02-9008-04
2/12/91

[illegible]
2/22/91

[illegible] 2/12/91

Suffolk Airport C+D Site
Westhampton, NY

02-9009-04
2/13/91

— On-Site Sampling —

NUS Personnel On Site:

Joanne Torchia — SM —
Dave Grupp — SSO —
Chris Agnew — SMO —
Maria Coler — Sampler — 2/13/91
Dave Floren — Sampler —

The above personnel have read and understand the workplan and QA/QC procedures.

— Equipment Numbers On-Site —

Cameras (2) Prints — # 731695
Slides — # 469775

OVA L — #469783 field ready - 2-8-91
HNU G — # 469753 " 2-8-91
Minirad — # 731689
Compass D — #684178

— Instrument Background Readings —

OVA — 0 ppm
HNU — 0 ppm
Minirad — 8 cpm

2/13/91
2/22/91

Suffolk Airport

02-4009-04
2/13/91

Weather Conditions: Overcast, Cloudy, light snow flurries / Wind approx 5-10 mph.
Temp: 25-30°

0920 - Arrived at the Division of Aviation
Spoke w/ Mr Latreuta briefly regarding our sampling procedures.

0930 - Arrived at site Location.
Set up decon area.

1000 - Dave Grupp + Joanne Torchi - walk perimeters of landfill area to assess sample locations.

1030 - Arrived back at decon area.

1035 - Dave Grupp holds health & Safety meeting: discussed potential hazards that may be encountered during sampling.
Physical hazards: construction debris, nails, glass, concrete mounds.
Team will sample on Level D unless there are readings on air instruments - Level C.

1045 - ~~Pr~~ Team proceeding to first sample location.

1053 - Arrived at sample location S1/MS/MSD
No readings on HNU, OVA, Minirad.

1055 - Photo of Maria Coler collecting S1
1P-1 - ~~Photo~~ Sample taken at 80° N and 150 yds from S. entrance
1S-1 Rocket containers are labelled as dummy warheads
containers located in a 15 feet diameter mound.

Annie Garibaldi 2/22/91

JT 2/13/91

Suffolk Airport

02-1009-04
2/13/91

~~Sample, ecotom approx 100/150 yrds from entrance~~
~~Surface sample taken at 0-6 inches;~~

1100 - Poto of S1 area
Note: pathway on left utilized for maintenance.
1P-2 ~~Photo taken~~ at 90° East
1S-2

1110 - Arrived at Sample location S2.
No readings on HNU, OVA, Minirad.
Dave Florin collecting Subsurface Soil samples with Auger Depth of soil sample approx. 1½-3 feet
At 1½ soil appears to be bright orange.

Sample location, located at SSW end of landfill approx 100 yrds from entrance and 50 yards from oil tank.
1117 - Photo of D. Florin collecting S2.
1P-3 Sample point ~~Photo~~ taken at 235° WSW and 50 yrds
1S-3 from oil tank.

1121 - Photo of Sample location S2
1P-4 Demolished building
1S-4 Photo taken at 270° West

1125 - Arrived at Sample location S3
No readings on HNU, OVA, Minirad
Maria Coler collecting Subsurface Soil Samples with Auger; Depth of soil sample approx. ~~1 foot~~ 8-18 inches.

[signature] 2/22/91 [signature] 2/13/91

~~S~~ JFK Airport

22-9009-04
2/13/91

1130 – Photo of Sample location S3.
Taken at 90° Northeast
1P-5 Note: construction debris in back of Sample
1S-5 location. Also, Red Juniper Tree in background.

1132 – Photo of Maria Colleed collecting S3.
Note: Sample taken directly below
container labelled Pramitol 25E.

1P-6 – Sample ~~Photo~~ taken at 90° NE and
1S-6 from a mound of Shingles, approx. 10 feet.

1135 – Team headed back to decon area
for other sampling equipment.
Preparing for Samples S4, S5, S6, S7.

1155 – Arrived at Sample location S4
No readings on HNU, OVA, Minirad.
Dave Florin collecting soil samples – Subsurface with Auger
at a Depth of 3 - 4 feet.
Soil contains some type of blue fragments.

1200 – Photo of Sample location S4
Taken at 295° WNW.
1P-7 Note: pile of Paint containers in a
1S-7 depressed area with large Pine Tree
to The Right approx 10 ~~feet from sample location~~

1202 – Photo of Dave Florin ~~collecting~~ S4
Sample ~~Photo~~ Taken at ~~310~~ 128 ~~WNW~~ NE
1P-8 Sample location approx 30 yds from South entrance.
1S-8

Anne Garibaldi 2/22/91 2/13/91

Suffolk Airport 02-9009-04
2/13/91

1205 - Proceeding to sample location S5/S11/DUP

1210 - Maria Coler collecting subsurface soil
Sample S5
No readings on HNU, OVA, Minirad.
Subsurface sample taken with Auger at a
Depth of 8-18" inches.
Soil appears to be bright orange.

1212 - Photo of Maria Coler collecting S5
1P-9 Photo taken at 104° SSE, approx. 30 yards from
1S-9 Sample southeast corner of oil tank.

1216 - Photo of sample location S5/S11/DUP
Note: Trees in background.
: Electrical Spool to the ~~left~~
1P-10 east
1S-10 Photo taken approx. 100 yrds from Road
at ~~app~~ 160° SSE, and approx. 200 yards
from south road.

1220 - Photo of containers labelled —
THINNER ALIPHATIC
POLYURETHANE COATING
1P-11 MIL.-T-81772 & AM2
1S-11
Location of container in same area as
S5/S11. Approx. 3 feet to the ~~east~~ at
220°. left (west)

Anne Grinalch 2/22/91 [signature] 2/13/91

Suffolk Airport

02-9009-04
2/13/91

1228 - Arrived at sample location S6
Dave Florin proceeding to collect S6.
No readings on HNU, OVA, Minirad.
Surface Soil Sample taken at a Depth ~~at~~ between
0-6 inches.

1231 - Photo of sample location S6
Note: Drums, household debris, construction debris in background.

1P-12
~~1S-12~~ Note: Photo of Rocket Packing containers labelled as Rocket Packing Containers
Photo taken at 228° ~~W~~ JT 2/25

12.35 - Photo of D. Florin collecting S6
Taken at 228° ~~ESE~~ SW approx 100 yards from
1P-13 east road and approx 100 yards from east
~~1S-13~~ entrance.

1237 - Heading back to decon area to prepare for
final samples S7, S8, S9, S10.

1305 - Arrived at sample location S7.
Maria Coler proceeding to collect S7.
No readings on HNU, OVA, Minirad.
Surface Soil Sample taken at a Depth between
0-6 inches.
Note: Soil color appears to be olive, tan.

Anne Garibaldi 2/22/91 Joanne Tonk 2/13/91

Suffolk Airport 02-9009-04
2/13/91

1310 - Photo of Mayne Colar collecting S7.
1P-14 At ~~290~~ 94° EAST. 50 yards from Oil tank
1S-14 Approx 150 yards from east entrance
1313 - Photo of sample location S7
Note: contents of Rockets - broken metal pieces.
1P-15 Surface soil appears to reddish in color.
1S-15 Photo taken at 190° SSW.

1315 - Arrived at sample location S8
No readings on OVA, HNU, Minirad.
D. Florin proceeding to collect S8

Note: Dave Florin notices an odor
Readings on OVA 8ppms on 1x scale
No readings in breathing zone but odor
is noticable.

~~Team~~ now upgrades to Level C
Dave Florin

1325 - D. Florin continues to collect S8 -

1327 - Photo of D. Florin collecting S8
Note: 3 drums, middle drum ~~is~~ has
1P-16 seeped a dark black resin,
resin has solidified.
1S-16 Photo ~~taken at 130°~~ 89° SE approx 100 yards
from oil tanks.
Surface soil sample at 0-6 inches.
Sample collected 100 yards from oil tank
and approx 60 yards from east entrance.

[signature] 2/22/91 [signature] 2/13/91

1332 - Photo of black resin seeping out of middle drum at sample location S8.
~~1P-17~~ ~~Photo taken at~~ 170° S
1S-17
Note: Drums are labelled as EL 47301.

(~~1338~~)

1338 - Arrived at sample location S9
No readings on OVA, HNU, Minirad
Maria Coler proceeding to collect S9
Surface Soil Sample taken at a Depth between 0-6 inches.

1340 - Photo of M. Coler collecting S9
Taken at 190° S ~~E~~ approx 20' from concrete pile.
1P-18 Note: Sample located along the South-
1S-18 Eastern border of the concrete demolition area.
Sample taken on an embankment of a (approx) 10' mound. approx 60 yards from east entrance.

1345 - Photo of sample location S9
Note: concrete demolition in background approx 20'
1P-19 Photo taken at 330° NNW
1S-19

1350 - Proceeding to background Sample Location S10.

Lorna [illegible] 2/22/91 — Lorna T[illegible] 2/13/91

Suffolk Airport

02-9009-04
2/13/91

1356 - Arrived at Background Soil Sample location S10
No readings on OVA, HNU, Miniral
D. Florin proceeding to collect S10
Surface Soil Sample taken at a depth between
0-6 inches.

1400 - Photo of D. Florin collecting S10/Background
Taken at 300° ~~ENE~~ NW approx 100 yards from oil tank.
10-20 Note: Soil is very sandy, Tan in color.
15-20 sample collected approx 100 yards from oil
tank.

1403 - Photo of Sample location S10
10-21 Taken 270° West.
15-21

1405 - Heading back to decon area.

Team deconing equipment /
Cleaning up decon area

1445 - Leaving Site

1600 - Dropped off soil samples at Fed. Express.

Anne Santaladi 2/22/91 [signature] 2/13/91

Suffolk Airport 02-9009-04
2/13/91

—Photo Log—

1P-1 - Photo of Maria Coler collecting S1 1053
1S-1

1P-2 - Photo of sample location ~~S1~~ S1 1100
1S-2 Note: Pathway on left utilized for maintenance.

1P-3 - Photo of Dave Florin collecting S2. 1112
1S-3

1P-4 - Photo of sample location S2- 1121
1S-4 Note: Demolished building, construction + household debris.

1P-5 - Photo of sample location S3. 1130
1S-5 Note: Construction debris in back of sample location.
Also, Red Juniper tree in background.

1P-6 - Photo of Maria Coler collecting S3. 1132
1S-6

1P-7 - Photo of sample location S4. 1200
1S-7 Note: Pile of paint containers in a depressed
area with large Pine Tree to the right.

1P-8 - Photo of Dave Florin collecting S4. 1202
1S-8

1P-9 - Photo of Maria Coler collecting S5/S11/DUP 1212
1S-9

Anne Garibaldi 2/22/91 [signature] 2/13/91

Suffolk Airport 02-9009-04

2/13/91

- Photo Log -
(Con't)

1P-10 - Photo of sample location S5/S11/DUP 1216
1S-10 Note: Trees in the background, electrical spool to the left.

1P-11 - Photo of containers labelled - 1220
1S-11 THINNER ALIPHATIC
POLYURETHANE COATING
MIL.-T-81772 { AM2.
Location - S5/S11.

1P-12 - Photo of sample location S6. 1231
1S-12 Note: Rocket packing containers

1P-13 - Photo of Dave Florin collecting S6. 1235
1S-13

1P-14 - Photo of Marta Coler collecting S7. 1310
1S-14

1P-15 - Photo of sample location S7. 1313
1S-15 Note: Contents of rockets, broken metal pieces.

1P-16 - Photo of Dave Florin collecting S8. 1327
1S-16

1P-17 - Photo of sample location S8. 1332
1S-17 Note: Black resin seeping out of Middle drum.

Anne Garibaldi
2/22/91

[signature] 2/13/91

Suffolk Airport 02-9004-04
2/13/91

- Photo Log -
(Con't)

1P-18 - Photo of Maria Coker collecting S9. 1340
1S-18

1P-19 - Photo of sample location S9. 1345
1S-19 Note: concrete demolition in background.

1P-20 - Photo of Dave Florin collecting S10/Background 1400
1S-20

1P-21 - Photo of sample location S10. 1403
1S-21 Note: Soil is very sandy and Tan in color.

Anne Garibaldi 2/22/91

[signature] 2/13/91

REFERENCE NO. 19

Water Resources Data New York Water Year 1989

Volume 2. Long Island

U.S. GEOLOGICAL SURVEY WATER-DATA REPORT NY-89-2
Prepared in cooperation with the State of New York
and with other agencies

Discharge measurements made at low-flow partial-record stations during water year 1989--Continued

Station No.	Station name	Location	Drainage area (mi^2)	Period of record	Measurements Date	Measurements Discharge (ft^3/s)
		Streams on Long Island				
01304600	Big Fresh Pond Outlet at North Sea, N.Y.	Lat 40°55'49", long 72°25'04", Suffolk County, at culvert on Noyack Road, at North Sea, 3.5 mi northwest of Southampton.	--	1951-69 1971-89	9-28-89	1.8
01304630	Mill Creek at Noyack, N.Y.	Lat 40°59'35", long 72°21'00", Suffolk County, 50 ft upstream from culvert on Noyack Road, 0.25 mi west of Noyack.	--	1958-89	9-28-89	.66
01304660	Ligonee Brook at Sag Harbor, N.Y.	Lat 40°59'21", long 72°18'12", Suffolk County, at culvert on Brick Kiln Road, 0.75 mi southwest of Sag Harbor.	--	1953-69 1973-89	9-28-89	.68
01304730	Poxabogue Pond Outlet at Sagaponack, N.Y.	Lat 40°55'48", long 72°17'18" Suffolk County, at culvert on Sagg St., at Sagaponack, and 1 mi southeast of Bridgehampton.	--	1953-78 1980-86 1988-89	9-28-89	4.6
01304745	Weesuck Creek at East Quogue, N.Y.	Lat 40°50'52", long 72°34'42", Suffolk County, at culvert on State Highway 27A, 0.5 mi northeast of East Quogue.	--	1974-89	9-28-89	1.9
01304760	Quantuck Creek at Quogue, N.Y.	Lat 40°49'57", long 72°37'06", Suffolk County, at culvert in Old Meeting House Road, 1 mi northwest of Quogue.	--	1953-69 1974-89	9-28-89	2.4
01304820	Speonk River at Speonk, N.Y.	Lat 40°49'06", long 72°41'29", Suffolk County, at culvert on State Highway 27A, 0.75 mi east of Speonk.	--	1974-89	6-30-89	1.7
01304830	East River at Eastport, N.Y.	Lat 40°49'24", long 72°43'02", Suffolk County, 15 ft upstream from culvert on Long Island Railroad, 200 ft south of State Highway 27A, 0.5 mi east of Eastport.	--	1953-69 1973-89	6-30-89	4.4
01304860	Seatuck Creek at Eastport, N.Y.	Lat 40°49'30", long 72°43'43", Suffolk County, 15 ft downstream from culvert on State Highway 27A, at Eastport.	--	1953-89	6-30-89	6.7
01304900	Little Seatuck Creek at Eastport, N.Y.	Lat 40°49'12", long 72°44'23", Suffolk County, at culvert on Moriches Blvd., 0.75 mi southwest of Eastport.	--	1955-69 1974-89	6-30-89	3.7
01304960	Forge River at Moriches, N.Y.	Lat 40°48'22", long 72°50'00", Suffolk County, at culvert on State Highway 27A, at Moriches.	--	1948-50 1952-89	9-28-89	10.

REFERENCE NO. 20

SUFFOLK COUNTY PINE BARRENS REVIEW COMMISSION

POLICIES AND STANDARDS FOR THE REVIEW OF APPLICATIONS IN THE PINE BARRENS ZONE

PINE BARRENS
REVIEW COMMISSION

DECEMBER 1988

INTRODUCTION

The County of Suffolk, in enacting Articles 13 and 37 of the Suffolk County Charter, has recognized that protection of the Pine Barrens is of vital importance. In so doing, the County finds that:

-The Pine Barrens is a significant groundwater recharge area;
-The Pine Barrens is a unique natural ecological community;
-The Pine Barrens incorporates a variety of natural, recreational, ecological, and aesthetic resources;
-The Pine Barrens are under increasing development pressures and competing demands that threaten to impair these resources.

Ideally, the way to effect comprehensive protection of the Pine Barrens is to prepare a master plan which would be implemented through the cooperative authority of local, county, and state governments. Until such time that a master plan is prepared, the Pine Barrens Review Commission will use the following policies and standards when reviewing applications for land uses and development within the Pine Barrens Zone.

TABLE OF CONTENTS

POLICIES AND STANDARDS

1. GROUNDWATER

The primary purpose of protecting the Pine Barrens Zone is to prevent contamination of the groundwater. Nitrate-nitrogen, a contaminant which emanates from numerous types of land uses, is a recognized indicator of groundwater quality. The State of New York nitrate-nitrogen standard for drinking water is 10 ppm. To ensure that concentrations of nitrate-nitrogen do not exceed this standard, the Suffolk County Department of Health Services has established a maximum nitrogen loading factor of 6 ppm. It is the policy of the Pine Barrens Review Commission to recommend disapproval of any development proposal where the nitrogen loading factor may cause the ambient nitrate-nitrogen concentration to exceed 6 ppm on the site. Furthermore, the Commission will recommend disapproval of all development proposals that are in contravention of Article 6 of the Suffolk County Sanitary Code.

2. WETLANDS

Freshwater wetlands, scattered throughout the Pine Barrens Zone, are very valuable natural resources that provide flood and erosion control, filter contaminants and sediments from runoff, and provide habitat for plants and wildlife. It is the policy of the Pine Barrens Review Commission to recommend disapproval of all development proposals where freshwater wetlands are not protected by a minimum 100-foot non-disturbance buffer area measured horizontally from the wetland edge.

Tidal wetlands, located in the marine environment bordering some of the Pine Barrens Zone, are equally valuable natural resources which provide many of the same benefits as freshwater wetlands. It is the policy of the Pine Barrens Review Commission to urge compliance with Article 25 of the NYS Environmental Conservation Law. Furthermore, the Commission will recommend disapproval of all development proposals where tidal wetlands are not protected by a minimum 100-foot non-disturbance buffer area.

3. SURFACE WATERS

Surface water bodies, which include freshwater ponds, lakes, streams, and rivers, plus saline ponds, creeks, and bays, occur throughout and adjacent to the Pine Barrens Zone. All are very valuable environmental, economic, and aesthetic resources. The protection of both the quality and quantity of these surface waters is vital to the protection of the Pine Barrens. It is the policy of the Pine Barrens Review commission to recommend disapproval of any land uses and development proposals that negatively impact on surface water quality and quantity, impair the natural functions of the surface water bodies, or fail to comply with the regulations of the State Wild, Scenic, and Recreational Rivers System applicable to the Peconic and Carmans Rivers. Furthermore, the Commission will recommend disapproval of all development proposals that do not include at least a 100-foot non-disturbance buffer adjacent to the surface water body.

4. NATIVE VEGETATION DISTURBANCE

The vegetation association which defines or characterizes the Pine Barrens includes pitch pines and various species of oak trees, plus numerous understory and ground cover plants such as blueberry and bearberry. Suffolk County is one of the few sites in the New York State where this unique vegetation association and ecosystem is found. Excessive, and often unnecessary, clearing of this native vegetation can result in severe soil erosion, excessive stormwater runoff, and destroyed wildlife habitat. Furthermore, the replacement of native vegetation by plants and lawns requiring artificial fertilization increases the risk of groundwater contamination. It is the policy of the Pine Barrens Review commission to encourage minimal clearing of native vegetation. Development proposals may not be recommended for approval if the disturbance/removal of native vegetation exceeds the following standards.

ZONING CLASSIFICATION	MAXIMUM CLEARING OF TOTAL SITE
1/2 Acre Residential	60%
1 Acre Residential	50%
2 Acre Residential	35%
3 Acre Residential	25%
4 Acre Residential	20%
5 Acre Residential	15%
Commercial	50%
Industrial	50%
Institutional	50%

Furthermore, subdivision and site design should be such as to preserve native vegetation in large, unbroken blocks or greenbelts that are connected to adjacent open space areas.

5. HISTORIC SITES

Scattered throughout the Pine Barrens Zone are numerous historical and archaeological resources encompassing buildings, districts, and landscape features listed or eligible for listing on state and/or national registers of historic places or archaeological place maps. It is the policy of the Pine Barrens Review Commission to recommend disapproval of all or a portion of any development proposal if it is determined that such development will negatively impact on properties listed or eligible for listing on the National Register of Historic Places; properties which are determined by the State Office of Historic Preservation or local inventories to be potentially eligible for inclusion on such registers; for properties considered to be of archaeological value as identified by the U.S. Department of Housing and Urban Development, archaeological resource maps, or archaeological inventories compiled by SUNY at Stony Brook.

6. RARE AND ENDANGERED SPECIES

The Pine Barrens ecosystem encompasses several species of rare, endangered, threatened and special concern animal and plant species of local and state-wide significance such as the buck moth, tiger salamander, lady slipper, and pixie. The federal and state governments have identified such species and have enacted laws to protect them and their habitats. It is the policy of the Pine Barrens Review commission to recommend disapproval of all or a portion of any development proposals that may negatively impact on habitat essential to rare, endangered, or threatened plant and animal species appearing on federal and state lists of such species and critical habitats.

7. FIRE HAZARD

The Pine Barrens has been characterized as a "fire climax forest," meaning that fire has determined the predominent vegetation. As such, the Pine Barrens is prone to periodic wildfires. Thus, any development within the Pine Barrens may be threatened and damaged or destroyed by fires. It is the policy of the Pine Barrens Review Commission to advise developers of Pine Barrens parcels of this fire threat and to encourage those developers to fully inform subsequent buyers of land. Furthermore, all developments should be designed so as to protect and promote the safety, health, and welfare of the residents in such fire hazard areas.

8. STEEP SLOPES

Disturbance of and construction on steep slopes within the Pine Barrens Zone can result in severe soil erosion, excessive surface water runoff, and excessive removal of native vegetation. It is the policy of the Pine Barrens Review Commission to recommend disapproval of any land clearing and/or construction of buildings, driveways, recreational facilities, and streets/roads on slopes of 15 percent or greater. Ideally, all land clearing and/or construction should be confined to sites where the slopes are no greater than 10 percent. Construction on slopes between 10 and 15 percent may be approved if the Commission determines that sufficient care has been taken in design and construction (such as requiring erosion control and stabilization measures) so as to mitigate negative environmental impacts.

9. RUNOFF WATER

Development of lands within the Pine Barrens Zone inevitably results in an increase of runoff water following precipitation. Runoff water originating from the roofs of buildings and from driveways is usually discharged directly to subsurface dry wells situated on the building lot. However, the great volume of runoff water originating from paved streets and roads is usually discharged by pipes into large open recharge basins or sumps. These basins often cover several acres and require the removal of much native vegetation to the detriment of the site's ecology and aesthetics. It is the policy of the Pine Barrens Review Commission to discourage the construction of large excavated recharge basins and to encourage the use of alternative natural recharge structures and methods which will cause less disturbance of the site. Such alternatives include the use of natural swales and depressions and/or the installation of vertical drains or inground dry wells.

10. FARMLAND

Scattered throughout the Pine Barrens Zone are parcels of farmland. Some of the parcels may be comprised entirely of active farmland, whereas others may encompass farmland and mature forest. While the Pine Barrens Review Commission is sensitive to and supportive of the need to preserve prime farmland, it's primary responsibility is to protect the groundwater quality and native vegetation/habitat of the Pine Barrens. It is the policy of the Pine Barrens Review Commission to give its highest priority to preserving the woodlands. For parcels that are entirely in active agriculture and contain prime agricultural soils, the Commission recommends the clustering of structures on the poorest soils and retention of the remaining prime farmland for agricultural use of a nature that will cause minimal impact on the groundwater quality. If such low-impact agriculture cannot be assured, the remaining farmland should be abandoned and allowed to revert to native vegetation. For parcels comprised of both active farmland and forest, the Commission recommends that preservation of the woodlands be given the higher priority. Furthermore, if active farming is planned for the underdeveloped area, the density standard of one dwelling unit per two acres adopted by the Suffolk County Department of Health Services must be met.

11. REZONING OF LAND

The protection of groundwater quality or of native vegetation/habitat are two paramount goals of the Pine Barrens Review commission. Both of these may be threatened/undermined by rezonings that increase land use density (such as rezoning from large-lot single-family residential to high-density multiple-family residential) and/or intensify use of the land (such as rezoning from low-density residential to commercial or industrial use). It is the policy of the Pine Barrens Review Commission to recommend disapproval of any rezonings that increase density and/or intensity of use unless it can be demonstrated that rezoning will not have an adverse threat to groundwater quality and/or native vegetation/habitat and complies with all other policies and standards of the Commission.

12. **INDUSTRIAL DEVELOPMENT**

Throughout the Pine Barrens Zone are numerous parcels of land that are zoned for industrial use. Future development of these parcels by industries that store and use toxic and hazardous chemicals could increase groundwater contamination. It is the policy of the Pine Barrens Review Commission to encourage the rezoning of vacant industrial sites within the Pine Barrens Zone to less intensive/less potentially hazardous uses, and the concentrating of industrial development outside the boundaries of the Zone. Furthermore, the Commission will recommend disapproval of any industrial/commercial development which may contravene the provisions of Articles 7 and 12 of the Suffolk County Sanitary Code.

13. **CLUSTERING**

Sprawl, in which most or all of a parcel of land is cleared and developed, destroys native vegetation/habitat and open space. Much of this damage can be minimized by clustering the structures on a portion of the site without any increase in density or intensity of land use. This design approach ensures the retention of large, unbroken tracts of open space which, when abutting those of adjacent parcels, can form an extensive natural greenbelt throughout an area. It is the policy of the Pine Barrens Review Commission to recommend disapproval of any subdivision that is not clustered unless an alternative design is found to be more appropriate by the Commission. Furthermore, the Commission requires that a yield map, conventional subdivision design map, and cluster design map for each subdivision be submitted for review.

14. **COORDINATED DESIGN**

Comprehensive, coordinated planning and design of development proposals, especially residential subdivisions, within the Pine Barrens Zone is essential to ensure maximum protection of open space. Frequently, landowners design their subdivisions without adequate consideration of the existing development and of future plans for the adjacent parcels. This can result in inefficient road patterns that may require unnecessary clearing and lot layout which may prevent the preservation of large, unbroken tracts of forest. It is the policy of the Pine Barrens Review Commission to review all development proposals for individual parcels in light of the potential or existing layout of all adjacent parcels to ensure that the designs are compatible and that minimal clearing and maximum open space preservation can be achieved. The owners of parcels are urged to consult with the town planning personnel before designing their subdivisions.

15. **ENVIRONMENTAL REVIEW**

Many of the environmental problems/concerns associated with development within the Pine Barrens Zone, can be identified and mitigated through a comprehensive environmental review pursuant to the State Environmental Quality Review Act (SEQRA). However, many development proposals apparently do not receive the vigorous environmental review that is warranted. Under the circumstances, all appropriate alternatives and mitigation measures may not be identified and considered. It is the policy of the Pine Barrens Review Commission to encourage full environmental review, including the preparation of an Environmental Impact Statement (EIS), for all major proposals (including large-scale zoning changes, special permits for major site plans, and plans for major subdivisions) and that all SEQRA documents relating to such environmental review be forwarded to the Commission for inclusion in its deliberations. Since the Pine Barrens Zone has been designated a "Critical Environmental Area," The Commission presumes that an EIS will be necessary for all development proposals.

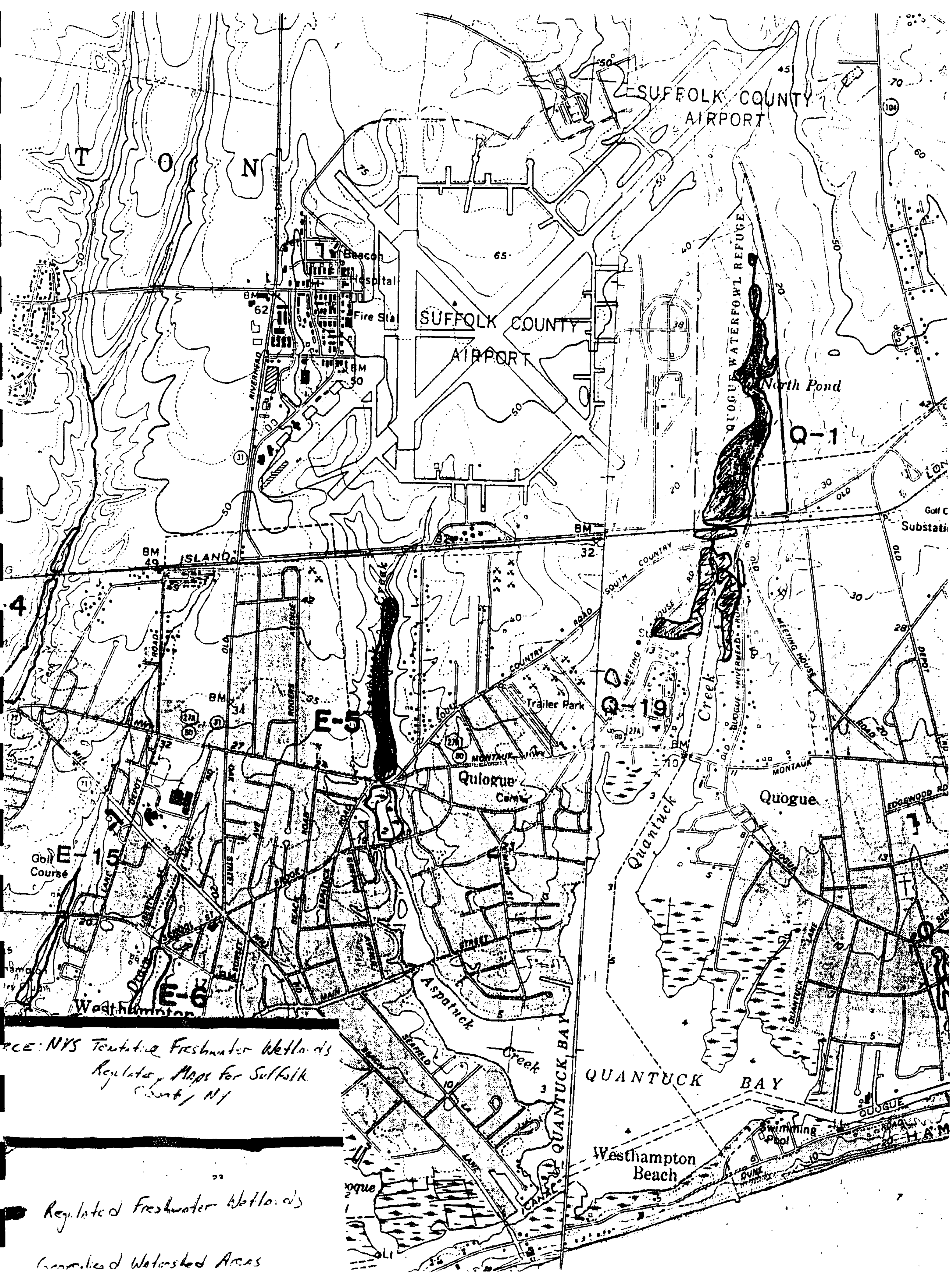
16. NON-DEVELOPMENT ALTERNATIVE

The best way to assure full protection of the water and ecological resources in the Pine Barrens Zone is by non-development. The County of Suffolk, the State of New York, and certain municipalities, through their respective open space acquisition programs, have identified numerous parcels within the Pine Barrens Zone for acquisition and preservation. Furthermore, all of the lands within the Pine Barrens Zone have been designated "critical environmental areas" pursuant to the State Environmental Quality Review Act, thereby classifying all development proposals as "Type 1 Actions" and requiring coordinated review. While government agencies are in the process of acquiring parcels, landowners often proceed with plans for development and submit those plans to the appropriate reviewing agencies. It is the policy of the Pine Barrens Review Commission to recommend full environmental review, including the preparation of an Environmental Impact Statement, for all development proposals planned for parcels which governments are seeking to acquire and serious consideration of the non-development alternative.

17. OPEN SPACE MANAGEMENT

The preservation of open space and of native vegetation/habitat within the Pine Barrens Zone is a major goal of the Pine Barrens Review Commission. This can be accomplished by establishing forested buffer zones and large blocks of undisturbed woodland on the development site. However, on-going protection and management of the open space must be assured against illegal dumping of refuse, cutting of trees, driving of motor vehicles, and other environmental abuses. It is the policy of the Pine Barrens Review Commission to recommend that all open space be designated as such by easements which specify restrictions on its use. Furthermore, an officially recognized entity (such as a homeowners association, local government agency, or not-for-profit conservation organization/trust) with authority to adopt and enforce regulations, should be assigned the responsibility for managing and protecting these areas. All open space areas created by easements should be indicated on the official map and in the respective deeds.

Cornell Cooperative Extension - Suffolk County
246 Griffing Avenue, Riverhead, NY 11901-3086



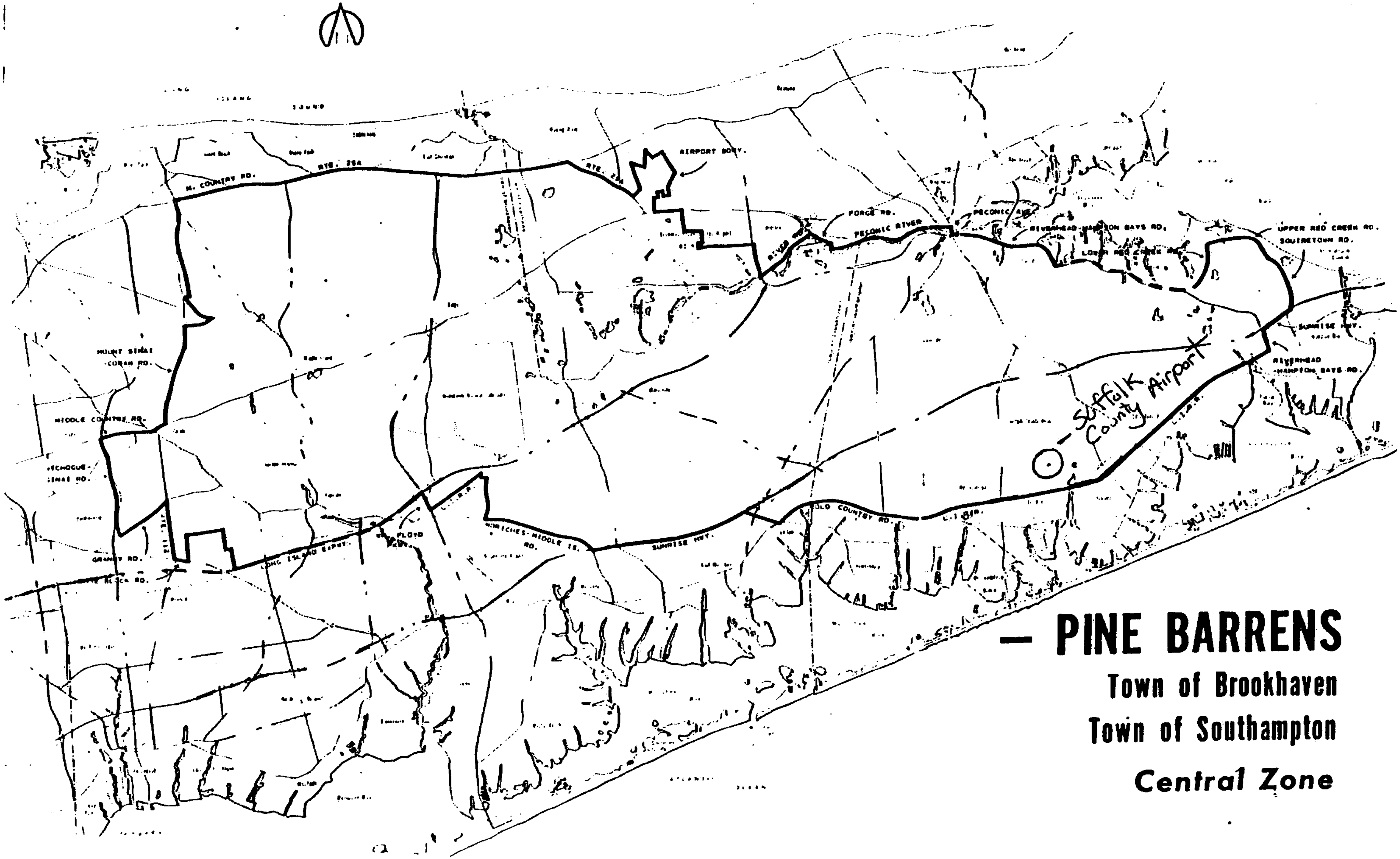
rce: NYS Tentative Freshwater Wetlands Regulatory Maps for Suffolk County NY

23

Regulated Freshwater Wetlands

Generalized Watershed Areas

Suffolk County
OFFICE OF ECOLOGY
(516) 548-3060



— PINE BARRENS

Town of Brookhaven
Town of Southampton
Central Zone

REFERENCE NO. 21

NUS CORPORATION AND SUBSIDIARIES

TELECON NOTE

CONTROL NO.: 02-9009-04

DATE: 4/24/91

TIME: 1440

DISTRIBUTION:

Suffolk County Airport C+D Site

BETWEEN: Eileen Shelden

OF: Division of Aviation Suffolk Airport

PHONE: 516 (288) 3600

AND: Joanne Torchia (NUS)

DISCUSSION:

Including the Air National Guard, there are between 500 - 600 people ~~#~~ employed at Suffolk County Airport.

JT

ACTION ITEMS:

REFERENCE NO. 22

COUNTY OF SUFFOLK

PATRICK G. HALPIN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

DAVID HARRIS, M.D., M.P.H.
COMMISSIONER

July 17, 1990

Thomas Junor, Assistant Director
Suffolk County Planning Department
H. Lee Dennison Building - 12th Floor
Hauppauge, New York 11788

RE: Avian Survey Data; Suffolk County Airport

Dear Mr. Junor:

Thank you for your call last week regarding the results of the 1990 avian species survey which was conducted at the Suffolk County Airport. As I mentioned, this year's data is currently being compiled and will ultimately be transferred to our geographic information system.

Because this task is not yet complete, I cannot provide you with a final map at the present time. In an effort to assist you, however, I have prepared the enclosed "working map" which identifies the locations of NYS-listed, avian species observed at the airport.

Please be aware that this map is not for public distribution and should remain as confidential planning information. Public distribution of this material can greatly increase the likelihood of species and habitat destruction by unscrupulous or unwitting individuals.

All mapped information reflects this year's data with the exception of the confirmed upland sandpiper nesting in the vicinity of the southeastern runway. Nesting confirmation at this location dates from 1987 when Office of Ecology staff conducted a field inspection of this portion of the airport. At that time, an adult upland sandpiper and nest were confirmed in the area indicted.

Please note the following information which is necessary to the proper interpretation of the map provided.

1. The 1990 avian survey was primarily intended to determine species presence or absence. Breeding information was not the specific objective of this survey, however important breeding information was obtained in the case of the upland sandpiper (Bartramia longicauda) (NYS-Special Concern Species).

The 1990 survey revealed a pair of upland sandpipers and an upland sandpiper chick, reconfirming the active use of this site by an increasingly rare grassland species.

2. Grasshopper sparrow (Ammodrammus savannarum) (NYS-Special Concern Species) verifications were based on the direct observation or auditory confirmation of singing males of this species. The presence of singing males typically indicates advertisement or territorial behavior and is a good indicator of breeding activity. Based on the habitat conditions and numbers of birds confirmed, we are confident that many of the grassland areas maintained at the airport provide significant habitat and breeding opportunities for this species.

3. Northern harriers (Circus cyaneus) (NYS-Threatened Species) are a confirmed breeding species at several locations within the dwarf pine plains immediately north of the airport. Survey observations of this species at the airport, involved foraging behavior and primarily indicated the airport's suitability in providing a source of food for foraging harriers. We believe the airport likely provides significant foraging range for those harriers nesting north of the site.

Based on this year's field data, however, we cannot speculate on the extent to which this species may breed within the confines of the airport property.

4. The presence of a single osprey (Pandion haliaetus) (NYS-Threatened Species) is likely to be a "flyover" and this species is not expected to breed within the confines of the airport. It is not, therefore, represented on the attached map.

The nearby location of Quantuck Creek, and the ice pond at the Quogue Wildlife Refuge (both of which provide suitable foraging opportunities) does suggest, however, the possibility that osprey's do, from time to time, temporarily roost or perch within the mature pitch pines along the southern and eastern perimeter of the site.

Based on the data compiled, it is, in our opinion, clear that the Suffolk County Airport provides utilized habitat for at least three NYS-listed species. Also, we believe that the airport provides breeding opportunities for at least two of these species whose grassland habitat is rapidly diminishing elsewhere on Long Island.

In addition, it appears that conditions at the Suffolk County Airport may provide suitable habitat for other NYS-listed grassland species (such as; eastern bluebird (Sialia sialia), vesper sparrow Pooecetes gramineus). The presence of such species may be confirmed through future surveys.

For the purpose of future planning and project location, we encourage efforts to minimize disturbance to grassland communities which occur at the airport. We are most concerned with maintaining sufficient contiguous grasslands to afford maximum protection of the site's NYS-listed species.

In general, we continue to support the following considerations for new development activities at the Airport.

1. Encourage all new development to occur within areas already disturbed by structures or human activities

2. Where development must occur outside of currently developed areas, minimize disturbance to contiguous grasslands

3. Where development occurs in grassland areas, disturbance should be initiated before the breeding season so as minimize potential disturbance of nesting and nest-seeking birds. Activities and initial site disturbance, should, therefore, be conducted between August 15th and April 15th.

We appreciate the opportunity to provide you with this information and hope it will be useful to your planning efforts. As mentioned above, we will provide you with the final map when it is complete.

If I can provide any additional information or be of assistance, please do not hesitate to contact the Office of Ecology at 548-3060.

Sincerely,

Robert S. DeLuca
Biologist
Office of Ecology

cc: Vito Minei, P.E.
Louise Harrison
George Proios, CEQ
James Bagg, SC Planning Department
John Turner, SC Department of Parks
Joseph Latrenta, SC Airport
Carl Helms, NYSDEC

Enclosure

REFERENCE NO. 23

COUNTY OF SUFFOLK

PATRICK G. HALPIN
SUFFOLK COUNTY EXECUTIVE

DEPARTMENT OF HEALTH SERVICES

DAVID HARRIS, M.D., M.P.H.
COMMISSIONER

April 4, 1991

Joanne Torchia
NUF Corporation
1090 King Georges Post Road
Edison, New Jersey 08837

RECEIVED

RE: Natural Resources Data; Suffolk County Airport Environs

Dear Ms. Torchia:

Thank you for your recent request for natural resources information pertaining to the Suffolk County Airport and its surroundings.

Despite the fact that the construction and operation of the airport has dramatically affected the site's natural environment, both the site and its nearby environs contain numerous sensitive natural features which require stringent protection.

The most significant features associated with this facility and its surroundings are outlined below. In addition to these general points, I have enclosed supporting documentation, reference materials, and contacts which should be helpful to your research.

I. Natural Resources Comments:

1. The facility is located within a "Deep Recharge Area" as first recognised by the Long Island 208 Study (1978) and subsequently incorporated into the regulations of the Suffolk County Department of Health Services (1983), and the New York State Department of Environmental Conservation's Long Island Groundwater Management Program (1986).

   Such areas are known to provide recharge water to a deep groundwater flow system, thus replenishing, the quantity and affecting the quality of the long-term water supply, which is extremely important to the replenishment of the groundwater aquifer system and regional drinking water supplies.

COUNTY CENTER
RIVERHEAD, N.Y. 11901

The Suffolk County Department of Health Services (SCDHS) is directly involved in the clean-up of several past fuel spills at the airport site. We believe attention to these issues is an important part of any detailed environmental evaluation. Our agency's Office of Water Resources should be contacted directly (see contact list) for current information related to pollution incidents and their ongoing remediation.

2. The Suffolk County Airport is located within a Critical Environmental Area (CEA) pursuant to the provisions of the State Environmental Quality Review Act (SEQRA - NYSECL; Article 8)

   The Central Suffolk Pine Barrens (within which the airport is located) have been designated by Suffolk County as a CEA. The CEA designation has also been conferred upon the property and its surroundings as part of a local zoning overlay area in the Town of Southampton, known as the Aquifer Protection Overlay District.

   CEA designation requires all actions approved, undertaken, or funded by a government agency to be processed as a "Type I" action pursuant to the rules and regulations governing SEQRA. This processing amounts to the requirement of a Long Environmental Assessment Form and the coordination of preliminary review materials with other agency involved in the approval of a proposed action [see NYCRR: 617.2(i)].

3. The Suffolk County Charter provides for the establishment of a County Nature Preserve on County-owned lands. Such properties are dedicated and intended for management in the most ecologically sensitive manner possible. A full description of the Nature Preserve program is provided in the attached Suffolk County Nature Preserve Handbook.

   Several such parcels are located within the undeveloped adjacent areas north and west of the airport. In addition, the recent Airport Master Plan provides for certain airport holdings to be considered for dedication to the Nature Preserve in the future.

4. The site and its adjacent areas provide habitat and confirmed occupation and breeding by New York State-Threatened and Special Concern Species as listed by NYS Environmental Conservation Law.

   The SCDHS, Office of Ecology has conducted breeding bird surveys on portions of the site and maintains data pertaining to the presence of avian species on this parcel.

5. Undeveloped portions of the site are characterized by pitch pine barrens communities, and the entire site is located within the Central Suffolk Pine Barrens Zone as established by the Suffolk County Pine Barrens Review Commission.

According to Articles 13 and 37 of the Suffolk County Charter, protection of the "Pine Barrens" is recognized as a resource of vital importance to the County. Furthermore, the County has found that:

* The Pine Barrens is a significant groundwater recharge area
* The Pine Barrens is a unique natural ecological community
* The Pine Barrens incorporates a variety of natural, recreational, ecological, and aesthetic resources; and
* The Pine Barrens are under increasing development pressure and competing demands that threaten to impair these resources.

5. Portions of the site (and much of its northern and western surroundings) are characterized by presence of a globally rare ecosystem (the dwarf pine plains) as recognized by the New York State Natural Heritage Program .

   According to the NYSNHP, the dwarf pine plains are imperiled because of extreme rarity and/or because of other factors making it very vulnerable to extinction throughout its range.

6. Several hundred acres of undeveloped land located north and west of the site have been the focus of public land acquisition efforts under the Suffolk County Open Space Program and the Suffolk County Drinking Water Protection Program.

7. The Quogue Wildlife Refuge (a 200+ -acre preserve, nature center, and trail complex) is located immediately east of the airport property. The refuge is a heavily used public education center and is regionally important as a passive recreational facility. Although the airport has traditionally been a "good neighbor" to the refuge, proper management must continue to reflect attention to the needs of this facility.

   Most notably, our agency (in cooperation with the Refuge) has continued to seek alternative locations for any development proposals suggested for construction on the eastern side of the airport property. The long-term maintenance of an undisturbed buffer in this area is essential to the preservation of the natural and public resources present at the refuge. This position has recently been recognised in the Suffolk County Airport Master Plan Update, which you may be familiar with.

8. The New York State Tentative Freshwater Wetlands Regulatory Maps for Suffolk County (Promulgated pursuant to NYSECL: Article 24 "Freshwater Wetlands") do not indicate any state-regulated freshwater wetlands as being located on the airport facility.

It is important to be aware, however, that the substantial Quantuck Creek wetlands system is located on the adjacent property of the refuge and the drainage basin for this system extends onto the eastern portions of the airport.

Furthermore, the southwestern portions of the airport are contained within the watershed of Aspatuck Creek which is located south of the site.

II. Additional Contacts:

Should you require additional information on any of the above-mentioned areas, I can suggest the following contacts which may be helpful to your investigation:

Airport Management (on site)
Joseph Latrenta, Airport Manager
Suffolk County Department of Public Works
Aviation Division
Suffolk County Airport
Westhampton Beach, NY
516-288-3600

Groundwater Resources/ Airport Remediation Programs
Steven Carey, P.E.
SCDHS - Office of Water Resources
225 Rabro Drive East
Hauppauge, NY 11788
516-348-2893

Existing and Proposed Planning for Suffolk County Airport
Thomas Junor, Assistant Director
Suffolk County Planning Department
H. Lee Dennison Building
Veterans Memorial Highway
Hauppauge, NY 11788

Local Municipal Planning Documents and Natural Resources Data
Thomas Thorsen, Planning Director
Town of Southampton
116 Hampton Road
Southampton, NY 11968
516-283-6000 (request Planning Dept.)

Quogue Wildlife Refuge

Carl Helms, Director
Quogue Wildlife Refuge
P.O. Box 492
Quogue, New York 11959
516-653-4771

Suffolk County Parks and Nature Preserve Program

John Turner, Director
Suffolk County Department of Parks
Division of Natural Resources
Montauk Highway
West Sayville, NY 11796
516-924-6767

Threatened and Endangered Species/Rare Communities

New York State Natural Heritage Program (NYSNHP)
Wildlife Resources Center
Delmar, New York 12054
518-439-7486

Michael Scheibel, Senior Wildlife Biologist
New York State Department of Environmental Conservation
Division of Wildlife
SUNY at Stony Brook
Building #40
Stony Brook, NY 11794
516-751-1596

Sarah Davison, Executive Director
The Nature Conservancy - South Fork Shelter Island Chapter
P.O. Box 2694
Sag Harbor, NY 11963
516-725-2936

III. Attachments Provided

With respect to the above-discussed information, the following materials are provided for your information.

* Suffolk County Nature Preserve Handbook

* NYSDEC; List of Threatened, Special Concern Species of New York State (highlighted to indicate those species possibly occurring or confirmed as occurring at the airport, based on SCDHS records)
  ***NOTE: This information should not be considered to be the only source of rare species data. NYSDEC and the NYSNHP also should be contacted directly for more current data which may exist.
* SCDHS; Avian Survey Data; Threatened and Endangered Species Summary of July 17, 1990, and Avian Survey Data of 1990
* Cryan, J. (1985). Retreat in the pine barrens. Defenders January/February, 1985.
* Suffolk County Pine Barrens Review Commission. 1988. "Policies and standards for the review of applications in the pine barrens."
* Suffolk County Pine Barrens Review Commission; Map of Central Zone Pine Barrens.
* NYSNHP; Priority listing of rare "Natural Communities" with occurrences on Long Island. R.E. Zaremba, 1986.
* Olsvig, L.S., et al. Vegetational gradients of the pine plains and barrens of Long Island, New York. In Pine Barrens: Ecosystem and Landscape. (R.T.T. Forman, ed.) pp. 265-281. Academic, New York.
* Good, R.E., et al. The pine barren plains. In Pine Barrens: Ecosystem and Landscape. (R.T.T. Forman, ed.) pp. 283 - 295. Academic, New York.
* Suffolk County Open Space Program; Description of the "Dwarf Pine Forest" acquisition proposal.
* NYSDEC; Tentative Freshwater Wetlands Regulatory Maps for Suffolk County; Sections of the Quogue and Eastport Quadrangles

I hope this information is useful to your research. We appreciate the opportunity to provide you with the enclosed information. Please feel free to contact the Office of Ecology at 516-548-3060, if you have any questions or require additional assistance.

Sincerely,

Robert S. DeLuca
Biologist
Office of Ecology

cc: Louise Harrison
James Bagg, Suffolk County CEQ
Thomas Junor, Suffolk County Planning
Carl Helms, NYSDEC

enclosure

REFERENCE NO. 24

40072-A1-E1-25[illegible]

New York

N. Y.—CONN.—N. J.

1:250 000-scale map of

Atlantic Coast Ecological Inventory

NUS CORP.

*County Maps Must Be Signed Out

*DONOT Take Map if it is the
Last One Left for that County
(SEE DRAFTING SUPERVISOR)

Produced by
U. S. FISH AND WILDLIFE
SERVICE
1980

NOTES

SPECIES WITH SPECIAL STATUS

Shortnose sturgeon (110) is found in coastal waters depicted on the New York sheet and migrates up the Hudson River.

American shad (116) is threatened in New Jersey.

Bald eagle and peregrine falcon (505, 507) migrate along coastal areas depicted on the New York sheet.

AQUATIC ORGANISMS

Due to scale limitations, only representative estuarine and riverine systems are shown.

Species that can be found from the shoreline to the three-mile limit depicted on the New York sheet include:

110g, 116g. 58cdf, 59de, 65abcdf. 111g, 113g, 115g, 117cd, 129cdfg, 130cdf, 138acdf, 139d, 140d, 142adf, 147bcdf, 149cdf, 157f, 160cdf, 173cdf, 177cdf, 178f, 183f, 185f, 186cdf.

or — Generally includes the following species:

116g. 59abcdef. 111g, 112cdf, 113g, 115g, 117cd, 128cfg, 129cdfg, 130f, 138abcdf, 139d, 140d, 142f, 147bcdf, 149bcdf, 157f, 160cdf, 177cdf, 178df.

Generally includes the following species:

116g. 59bcf. 111g, 112cdf, 113g, 115g, 117bc, 128bcfg, 129cdfg, 138bcf, 139bd, 140bd, 149b, 151bg, 156bd, 160bcdf, 180abd.

Species of importance in a particular river, creek, or sound are denoted on the map.

TERRESTRIAL ORGANISMS

During spring and fall migration many species of shorebirds, wading birds, raptors, seabirds, and songbirds (401, 431, 501, 531, 551) concentrate at bays, inlets, harbors, and islands throughout Long Island Sound.

Many species of geese, dabbling ducks, and diving ducks (463, 464, 465) overwinter in the bays, inlets, and harbors depicted on the New York sheet.

HABITAT USE

Shown in RED for species with special status, BLUE for aquatic organisms and BROWN for terrestrial organisms

a Spawning ground
b Nursery
c Commercial harvesting area
d Adult concentration
e Overwintering area
f Sport fishing/hunting area
g Migratory area
h Nesting area
i Unusual distribution or specimen

POINT AND AREA FEATURE SYMBOLS

(shown in RED for species with special status; shown in BLUE for aquatic organisms; and shown in BROWN for terrestrial organisms)

Localized concentration of species 500h

General habitat boundary for indicated species; may be superceded by special land use boundary 100d

LAND USE—LAND COVER SYMBOLS

Study area (coastal zone boundary to three-mile limit) ....

Special land use areas, including refuges and wildlife management areas, parks and seashores; may be used in lieu of habitat boundary ....

Subdivision of a special land use area into more than one designation ....

Swamp ....

Marsh ....

Beach/Dunes ....

Seagrass ....

Reef ....

LEGEND

POPULATED PLACES

Over 500,000 — BOSTON
100,000 to 500,000 — RICHMOND
25,000 to 100,000 — EVANSTON
5,000 to 25,000 — Newnan
1,000 to 5,000 — Bar Harbor
Less than 1,000

ROADS

Primary, all-weather, hard surface
Secondary, all-weather, hard surface
Light-duty, all-weather, improved surface
Fair or dry weather, unimproved surface
Trail
Interchange
Route markers: Interstate, U.S., State — 95 29 193

RAILROADS — Single track — Double or Multiple
Standard gauge
Narrow gauge

BOUNDARIES
International
State
County
Park or reservation
Mine

Landplane airport
Landing area
Seaplane airport
Seaplane anchorage
Power line

Landmarks: School; Church; Other
Depth curve in feet
Limit of danger; Reef
Rocks: Awash
Foreshore flat
Intermittent or dry stream

Mud

TERRESTRIAL ORGANISMS

Shown in BROWN; species with special status shown in RED-(F) or (S) indicates species protected by Federal or State Legislation (see text)

SYMBOL — SPECIES

PLANTS (301-350)

301 Eastern hemlock
302 Spleenwort (S)
303 Spider lily (S)
304 Pond bush (S)
305 Watermilfoil (S)
306 Hooded pitcher plant (S)
307 Tree
308 Prickly pear cactus (S)
309 Trailing arbutus (S)
310 Eastern bumelia
311 Pitcher plant
312 Baldcypress
313 Redbay
314 Seaside alder
315 Box huckleberry
316 Purple fringeless orchid
317 Pink lady's slipper
318 Ebony spleenwort (S)
319 Orchids (S)
320 Golden club (S)
321 Florida beargrass
322 East-coast coontie
323 Fall-flowering ixia
324 Jackson-vine
325 Spoon-flower
326 Curtiss milkweed
327 Sea lavender
328 Hand fern
329 Needle palm
330 Yellow squirrel-banana
331 Beach creeper
332 Florida coontie
333 Four-petal pawpaw
334 Bird's nest spleenwort
335 Burrowing four-o'clock
336 Beach star
337 Silver palm
338 Dancing lady orchid
339 Tamarindillo
340 Fuch's bromeliad
341 Everglades peperomia
342 Buccaneer palm
343 Slender spleenwort
344 Pineland jacquemontia
345 Mahogany mistletoe
346 Florida thatch
347 Twisted air plant
348 Long's bittercress
349 Venus's flytrap

BIRDS (401-600)

SHOREBIRDS (401-430)

401 Shorebirds
402 Terns
403 Gulls
404 Forster's tern
405 Arctic tern
406 Least tern (S)
407 Roseate tern (S)
408 Common tern
409 Great black-backed gull
410 Herring gull
411 Laughing gull
412 Black skimmer (S)
413 Turnstones
414 Plovers
415 Piping plover
416 American oystercatcher (S)

WADING BIRDS (431-460)

431 Wading birds
432 Herons
433 Egrets
434 Rails
435 Ibises
436 Bitterns
437 Great blue heron (S)
438 Wood ibis (S)
439 Anhinga
440 Little blue heron (S)
441 Yellow-crowned night heron (S)
442 Black-crowned night heron
443 Florida sandhill crane (S)
444 Louisiana heron (S)
445 Limpkin (S)
446 Roseate spoonbill (S)
447 Snowy egret (S)
448 Magnificent frigate-bird (S)
449 Reddish egret (S)
450 Clapper rail
451 King rail
452 Virginia rail
453 Sora rail

WATERFOWL (461-500)

461 Waterfowl
462 Swans
463 Geese
464 Dabbling ducks
465 Diving ducks
466 Common eider
467 Harlequin duck
468 Wood duck
469 Fulvous tree duck
470 Loons
471 Grebes
472 Brant geese
473 Snow goose
474 Gadwall
475 Black duck

RAPTORS (501-530)

501 Raptors
502 Owls
503 Kites
504 Hawks
505 Bald eagle (F)
506 Osprey (S)
507 Peregrine falcon (F)
508 Copper's hawk (S)
509 Swallow-tailed kite
510 Marsh hawk (S)
511 Southeastern American kestrel (S)
512 Florida burrowing owl (S)

AQUATIC ORGANISMS

Shown in BLUE; species with special status shown in RED-(F) or (S) indicates species protected by Federal or State Legislation (see text)

SYMBOL — SPECIES

PLANTS (1–50)

1 Irish moss
2 Rockweed

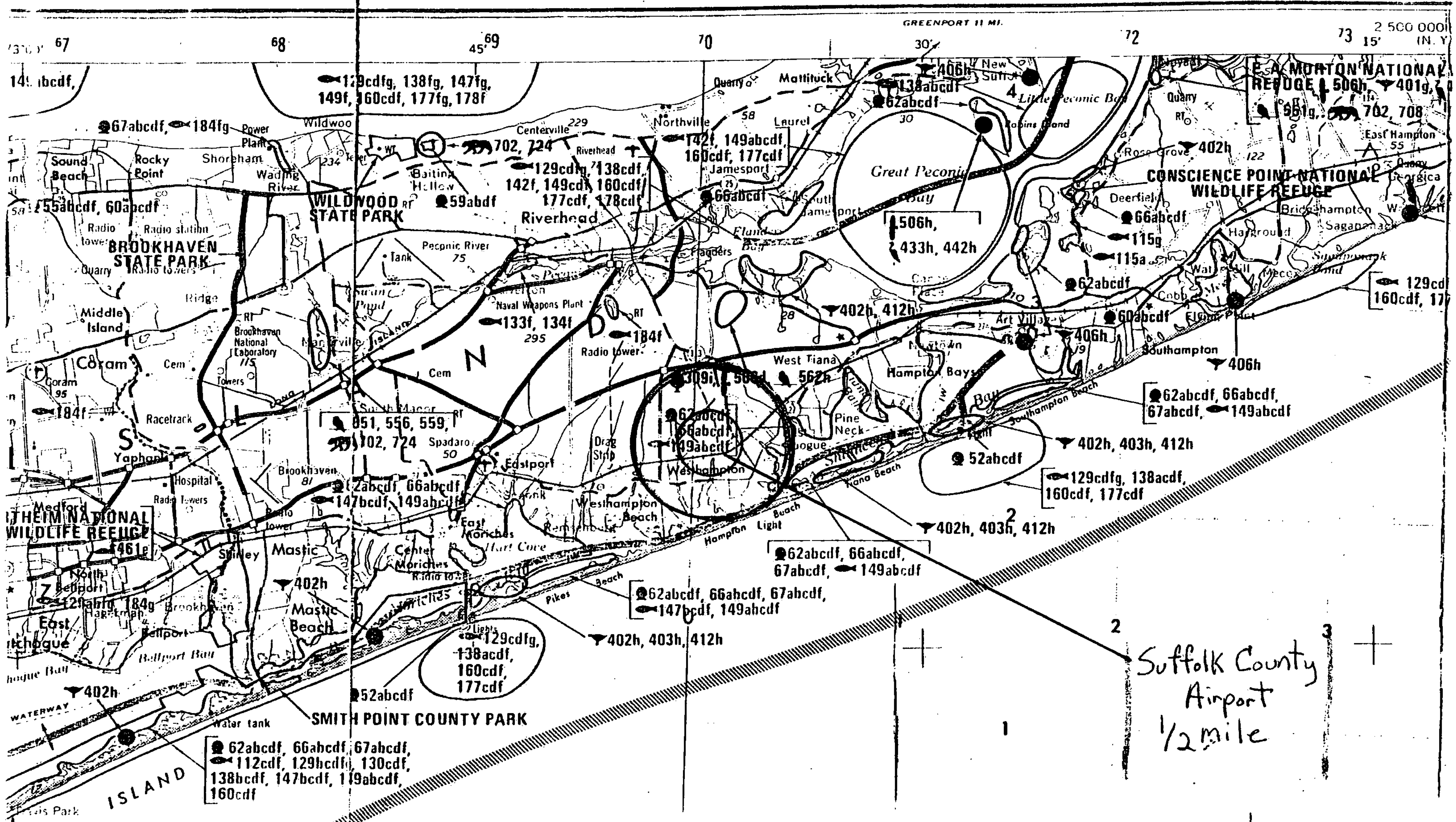
INVERTEBRATES (51-100)

51 Crabs
52 Mussels
53 Oysters
54 Scallops
55 Clams
56 Worms
57 Shrimp
58 American lobster
59 Blue crab
60 Eastern oyster
61 European oyster
62 Bay scallop
63 Deep-sea scallop
64 Calico scallop
65 Surf clam
66 Hard clam
67 Soft shell clam
68 Brackish-water clam
69 Bloodworm
70 Sandworm
71 White shrimp
72 Brown shrimp
73 Northern shrimp
74 Rock crab
75 Jonah crab
76 Whelk
77 Ocean quahog
78 Pink shrimp
79 Stone crab
80 Spiny lobster

FISH (101-200)

101 Sharks, skates, rays
102 Herring
103 Salmon and trout
104 Catfish
105 Cod
106 Sunfish and bass
107 Drum
108 Flatfish
109 Longnose gar
110 Shortnose sturgeon (F)
111 Atlantic sturgeon (S)
112 American eel
113 Blueback herring
114 Hickory shad
115 Alewife
116 American shad (S)
117 Atlantic menhaden
118 Atlantic herring
119 Gizzard shad
120 Tarpon
121 Atlantic salmon
122 White catfish
123 Channel catfish
124 Yellow bullhead
125 Brown bullhead
126 Flat bullhead
127 Sea catfish
128 White perch
129 Striped bass
130 Black sea bass
131 Redbreast sunfish
132 Warmouth
133 Bluegill
134 Largemouth bass
135 Black crappie
136 Sheepshead
137 Spotted seatrout
138 Weakfish
139 Spot
140 Atlantic croaker
141 Southern kingfish
142 Northern kingfish
143 Gulf kingfish
144 Red drum
145 Star drum
146 Black drum
147 Summer flounder
148 Southern flounder
149 Winter flounder
150 Rainbow smelt
151 Atlantic tomcod
152 Threadfin shad
153 Carp
154 Atlantic mackerel
155 Chain pickerel
156 White bass
157 Northern puffer
158 Silver perch
159 Florida pompano
160 Bluefish
161 Spanish mackerel
162 Cobia
163 Mullet
164 White crappie
165 Redear sunfish
166 Smallmouth bass
167 Yellow perch
168 Pumpkinseed
169 Atlantic halibut
170 Atlantic cod
171 Pollock
172 Haddock
173 Hake
174 Bluefin tuna
175 Walleye
176 Northern pike
177 Scup
178 Tautog
179 Atlantic spadefish
180 Bay anchovy
181 Butterfish
182 Little tunny
183 Atlantic bonito
184 Brown trout
185 Cunner
186 Yellowtail flounder
187 Gulf flounder
188 Pinfish
189 King mackerel
190 Pigfish
191 White grunt
192 Tripletail
193 Ladyfish
194 Snook
195 Jack
196 Snapper
197 Grouper
198 Sailfish
199 Great barracuda
200 Maryland darter (F)

ouo-00



Scale 1:250,000

5 0 5 10 15 20 Statute Miles

5 0 5 10 15 20 25 30 Kilometers

5 0 5 10 15 Nautical Miles

TRANSVERSE MERCATOR PROJECTION

BLACK NUMBERED LINES INDICATE THE 10,000 METER UNIVERSAL TRANSVERSE MERCATOR GRID, ZONE 18

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